

2-25-1987

## Avion 1987-02-25

Embry-Riddle Aeronautical University

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# AVION

An Award-Winning College Newspaper

Volume 55, Issue 7

Embry-Riddle Aeronautical University, Daytona Beach, Florida

February 25, 1987



Mr. Jack Haun is pictured in front of a navy A4F Blue Angel. The Blue Angels' A4F's will soon be replaced by the F/A 18.

## President Reagan cuts national education budget

National Student News Service

WASHINGTON, DC -- President Reagan's proposed budget for fiscal year 1988 would reduce allocations for the Department of Education from \$19.5 billion to \$14 billion, with most of the cuts coming from a 46 percent slash in student aid funding.

The Department of Education from \$19.5 billion to \$14 billion, with most of the cuts coming from a 46 percent slash in student aid funding. Programs designed to aid students from low and middle income families would bear the brunt of the proposed cuts, while a controversial income-contingent loan program would be dramatically increased.

The proposal, which has drawn criticism from key education officials, also calls for the rescinding of student aid budgets already approved for fiscal 1987.

Opponents of the budget request say the cuts would negate several major points in the reauthorized Higher Education Act, which was passed by Congress and signed by the president last fall. The programs facing

follows:  
Pell Grants: designed by Sen. Claiborne Pell (D-R) to assist financially independent students. The proposal would drop over a million students from the program by limiting eligibility to students with family incomes of under \$20,000 per year. Also, the 30 percent ceiling on applications

### Financial Aid Programs Involved

Program	Approved FY 1987	Reagan's Proposed Budget FY 1988	Reagan's Proposed Budget FY 1988
Pell Grants	\$3.6 billion	\$2.7 billion	\$2.7 billion
SEOG	\$412.5 million	\$412.5 million	0
Work-Study	\$800.5 million	\$692.5 million	0
WPSL	\$118 million	\$118 million	0
SSIG	\$76 million	\$76 million	0
OSL	\$3,004 million	\$2,287 million	\$1,177 million
TRIO	\$176.4 million	\$94 million	\$824 million
Perkins loans	\$210 million	\$198 million	\$26 million
ICL	\$5 million	\$200 million	\$200 million
Total	\$8.2 billion	\$2,055 billion	\$4.5 billion

\* Additional funds to compensate for inadequate allocation.

Source: American Council on Education

students. Primary effects: reduces aid to low-income students.

College Work-Study: enables students to work on and off campus to defray the costs of their education.

See Budget page 6

## Council awards ERAU contract

ERAU Press release

System (ISTS) using the National Airspace System as a demonstration vehicle.

"The ISTS concept focuses on cognitive learning and on student problem-solving, judgment and decision making in a complex, heuristic world," said Vice President, Special Projects, Dr. William Motzel.

"The ISTS will create an interactive, multivariable and multidisciplinary environment in which students will learn by doing."

Embry-Riddle was designated an "Airway Science approved University" by the Federal Aviation Administration.

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## Campus construction proceeding as scheduled

By Michael Fried and Tim Haas  
Avion Staff Reporters

Construction of the new Administration building is currently on schedule, with a projected occupancy date of May 22, 1987. The new Data Processing Building, as stated by Mr. Charles Fountain, Business Director, is one week ahead of schedule, with a proposed June 29 opening date.

The new Administration Building will have 46,741 square feet of floor space. This will be enough room for all of the Embry-Riddle off-campus offices, except for those belonging to the International campus. All current Embry-Riddle off-campus offices will then be terminated once construction has been completed.

Changes to the Daytona campus as a result of the Administration building will be minimal.

See Campus, page 18

## Freshmen still waiting for flight training courses

By Ron McCann  
Avion Staff Reporter

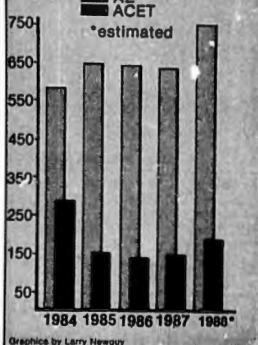
According to Pat O'Gara, Training coordinator for FA 104 primary flight, ERAU entered the spring semester with 300 students waiting to begin this course. Currently, there are 153 students that are still waiting for instructors. Because it was anticipated that a large number of flight students would be enrolling this semester for FA 104, no new transfer students can be accepted for the flight program, with a few exceptions.

Mr. O'Gara stated that the reason for the delay this semester has been the inclement weather. Since FA 104 is the flight course most affected by these conditions, it has caused many

delays. Another reason for the delay is that three morning instructors aren't flying. To overcome this problem, two instructors have been hired and more are being interviewed by Paul McDuffie, Chairman of the flight department.

Mr. O'Gara is confident that all students who start by the beginning of March will be finished by the end of the semester. For those who don't finish, he hopes that they will begin over the summer. It has also been proposed that an incentive, such as reduced deposits, be offered to students to encourage flight students to stay over the summer term. Mr. O'Gara also pointed out that the emphasis in the flight program is on quality not speed and asks that students be patient.

## HISTORIC ENROLLMENT DATA



Graphics by Larry Newguy

## Campus sports facilities get refurbishing

By Tom Julian  
Avion Staff Reporter

Many of the sports facilities on the Daytona Campus are undergoing improvements and additions. According to Charles Fountain, Director of Business, several projects are underway to realize the needed refurbishment of existing facilities and the completion of those started with last year's campus redesign.

Scheduled for improvements are: the racquetball courts, the basketball courts, the softball field, the all purpose field located behind the library, and the field between the University Center and the softball field.

Work has already begun on the racquetball court. The walls have developed large cracks due to settling of the foundation. The cracks are being filled. The walls will be

The first games scheduled to be played will be in March during the softball season. The new softball field, the softball field, the all purpose field located behind the library, and the field between the University Center and the softball field.

Fresh sod will be laid down next month on the new auxiliary athletic field between the U.C. and the softball field. This will be a free area for general purpose use.

On the field directly west of the library, new multi-sport "H" style goal posts will be erected to accommodate games of football, soccer, and rugby.

## Plans for ACET reaffirmed

By Larry Benninger  
Avion Staff Reporter

Dean Robert Brown and Engineering Department Chairman Walter Schimmel met this past week with a large group of students in the Aircraft Engineering Technology (ACET) Program. The purpose of the meeting was to reaffirm the University's commitment to keeping the ACET program.

The message from the Administration was clear. Dean Brown emphasized, "There is no plan, that I know about, to stop and look at them, and re-evaluate the program." Dr. Brown stated that the University would, "keep this program, and try to make it the best program in the country." Embry-Riddle will not only keep ACET, but will expand the number of students enrolled in the program.

The University is currently seeking a special Department Chairman so that Dr. Schimmel is not divided between the ACET and Aeronautical Engineering programs. A dedicated department chairman, hopefully in place by next September would give the ACET program, as Dean Brown stated, "its own identity, its own meaning in life."

Many students of the program were concerned about the future of the program because some members of the Industrial Advisory Committee (IAC) wished to have the program terminated. The meeting was called in part to alleviate some of the tension caused by the IAC member's concern.

In addition, Dr. Brown pointed out that the opinions of the IAC were by no means universal in the industry. Predominantly on our committee (IAC) are a group of Engineers, and Engineers sometimes - occasionally - will look down, will look away from Technology, and even in some departments may not even be hiring Engineering Technologists. But that's not what we were told when ABET came and reviewed us about a year ago. They claimed that we had a strong program, and they claimed that we were on the right track.

For these reasons, the Administration has decided that the program should be continually developed. Dr. Schimmel pointed to the

See ACET page 8

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### Inside the Avion this week

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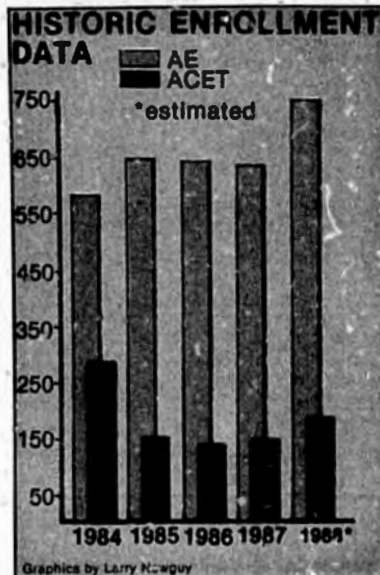
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Work has already begun on the racquetball courts. The walls have developed large cracks due to settling of the foundation. The cracks are being filled. The walls will be painted, and the doors will be refinished.

The final gradings on the new softball field were completed last week Thursday, and the pitcher's mound will be completed this week.

The first games scheduled to be played will be in March during the softball marathon to benefit the Special Olympics. Though completely usable, the infield won't be in prime condition for about a year, until the clay (imported from Georgia) has completely settled. At that time, the infield should shed rain water to the surrounding grass. The sod also needs time to grow while the gaps fill in.

Fresh sod will be laid down next month on the new auxiliary athletic field between the U.C. and the softball field. This will be a free assay area for general purpose use.

On the field directly west of the library, new multi-sport "H" style goal posts will be erected to accommodate games of football, soccer, and rugby.

The newest addition to Embry-Riddle sports facilities will be two new basketball courts adjacent to the existing court by dorms I and II. Bidding is currently underway on this project, but construction is expected to begin in the near future.

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Many students of the program were concerned about the future of the program because some members of the Industrial Advisory Committee (IAC) wished to have the program terminated. The meeting was called in part to alleviate some of the tension caused by the IAC member's recommendations.

Dr. Brown emphasized that the IAC serves the University in an advisory capacity only. Decisions about the nature and future of programs are made by the Board of Trustees.

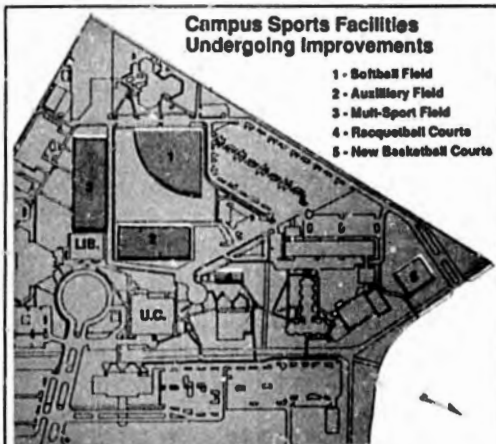
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Indicated above (in color) are the athletic facilities undergoing refurbishments, or planned construction. This was part of the overall campus redesign construction started last year.

**inside the Avion this week**

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**TRIVIA** - The German Heinkel 162 jet fighter, Spatz, or Volksjager, first flew just under three months after the request for specifications.

## Editorial

## Responsibility: everyone's affair

The Avion is a student run newspaper, produced by a nearly all volunteer, student staff. We are an unofficial school newspaper funded by student fees.

We produce an award winning newspaper which we think is the best college newspaper in the country. We like to think we are perfect, but sometimes problems arise.

Sometimes certain items submitted do not get printed. This is an unfortunate occurrence. But if an item is submitted, there is no guarantee that it will get printed. This goes back to "Student-volunteer Newspaper." If the Avion was an official school newspaper, which we hope never to be, then we would have to guarantee printing of submissions. The Avion Editors, not the submitter of the item, make the final decision whether an item is to be printed.

The most frequent complaints come from those who submit items for the Clubs page. We often feel that the clubs are the most abusive to their section and the student population. The guidelines for Clubs and Organization articles, as stated in a letter to all clubs (printed in the Jan. 12 issue of the Avion), is for the clubs to convey to the rest of the student population their current activities. In the past the clubs have been using the Avion as a newsletter to their members. This is not the intended purpose of the Clubs section.

The club articles are not intended for congratulatory, opinionated commentaries, or reviews of the last weeks party. If important news or information is critical it should be sent directly to the club members. This is what an individual club newsletter or bulletin board is for. We reserve the right to edit all submissions, if deemed necessary, as stated in the Avion masthead.

The Avion is the only college newspaper that we know of that prints a clubs page. We feel this is a valuable service to the students. This service takes time and money to print, which are both very precious to college students, (student-volunteer newspaper again, remember?).

Another reason other college publications do not print club articles, is that this is "printing in the blind," for they can not verify every fact that appears.

The policies set up, by the Editorial Board, for the clubs section are made for a reason, they provide guidelines for a mutual trust between the Avion and the Clubs as to the truth of the facts that appear. When this trust breaks down, problems arise from the misquoting of facts, which causes headaches for the Avion staff members, and the advisor.

The clubs section is already a time consuming section for the overworked, underpaid staff. We would like to continue the clubs section, but if the Clubs continue to abuse their privilege we will have no other choice but to delete the section altogether.

NOW YOU DON'T HAVE TO STEAL TO GET 'EM



IF YOU JOIN THE NAVY NOW, YOU CAN RECEIVE A HELMET, A PAIR OF WINGS, AND EVEN A HELICOPTER FOR FREE!  
SO WHAT ARE YOU WAITING FOR? CALL 1-800-4-NAVY-FLY

## Letters to the Editor

## Disgusted

To the Editor:

In reference to the article, "Flight Gear Stolen from Helicopter" featured in the Feb. 18 issue of the Avion - I am disgusted!

I am disgusted at the total lack of respect for the United States Navy and for the school shown by these vandals.

These thieves have placed yet another black mark on the name of our school. They have also marked the Naval Aviation Club, the sponsors to the Sea King's visit. These people (and I use the word "people" loosely) could not have imagined the consequences had they been caught, let alone the irreparable damage done to the credibility of this school. It is just another striking example of the type of people who

possible to insure that all guests feel and be safe from these and all vandals.

I also believe that this incident probably would not have happened if security was on the ball and had a watchman patrolling the craft until 9 p.m. departure.

As a hopeful future Naval Aviator, I will remember this incident well, just as I am sure the SH-3 jocks will also. I know that if I ever am asked to bring my multimillion dollar craft to this institution for any reason, I will regretfully have to tell Capt. Byington, no I cannot.

Captain Byington, the Faculty Advisor for the Naval Aviation Club, is responsible for bringing static displays to our school.

I am sending a copy of this letter to the officials of our school with a cover letter forwarding the notion that the school accept all responsibility

and staff. It was regarding an issue brought forth in the Feb. 11 Avion - "Do you think the lighting on Campus is adequate?"

I was one of two gentlemen who replied (in the Student Forum) "yes". However, I explicitly stated the flight line as being lit well enough, and this was my opinion.

Obviously they (the 32 female students and faculty) were not happy with my opinion, and would like to ask me again.

Well I do think it is adequate at the Flight Line. I have been attending Embry-Riddle for two years and have not heard of any attack upon any member of the female or male student body because of lighting problems.

You (the 32 females) asked me if I'd feel safe if my mother or girlfriend were on campus, alone, at night. If they were in Daytona I would recommend that they don't go into the darker places on campus. I would also give the same advice if they were to be in the Halifax Hos-

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Finally, I would like to say something about the "Student-Forum" section of the Avion. It must be understood that there is no room to write an essay here. With this in mind, I would think that the person reading the Forum would understand that the opinions are of the utmost general nature.

Dirk Sackno  
Box 4408

## Common Confusion

To the Editor:

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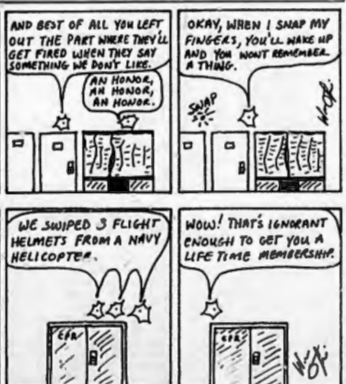
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News Editor  
Paul Novacek

Space Technology Editor  
Peter Merlin

Aeronautics Editor  
Brian Nicklas

Photography Editor  
Tim Haas

Copy Editor  
Paul Novacek

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Diversions Editor  
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Production Manager  
Chip Zedrow

Lab Technician  
Rich Clarke

Avion Advisor  
Dr. Roger Osterholm

This week's staff: Dave Roys, Wes Oleszewski, Steve Cagle, Hendry Betts, Rich Gray, Larry Benninger, Bill Fisher, John Getty, Jeff Guzzetti, Kelli Young, Manuel Fernandez-Longo, and Tom Julliani.

The opinions expressed in this newspaper are those of the majority of the Editorial Board, and do not necessarily represent those of the university, the staff of the Avion, or the members of the student body. Letters appearing in the Avion do not necessarily reflect the opinions of this newspaper or its staff. Letters submitted may be edited for brevity and may be printed provided they are not obscene, libelous, or defamatory. Letters shall contain themselves to a single topic. All letters must be accompanied by the signature of the writer. Names may be withheld on request, at the discretion of the Editor.



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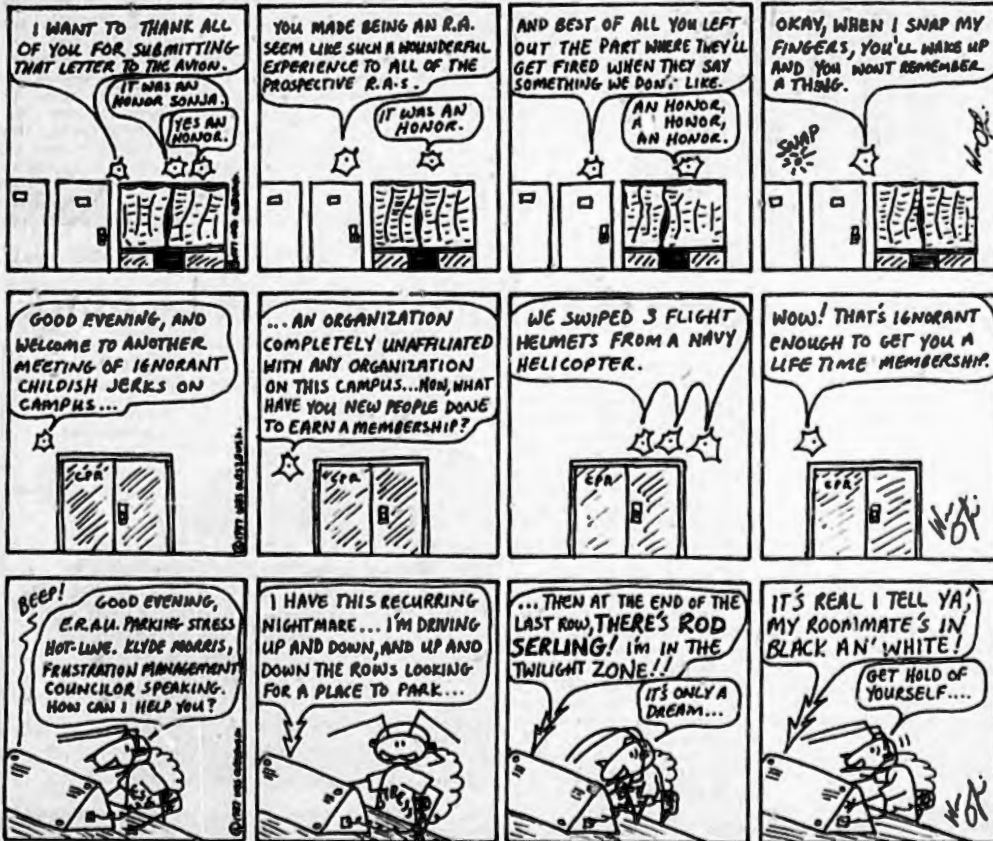
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Copy Editor Paul Novacek	Lab Technician Rich Clarke
Sports Editor Allen Berg	Avion Adviser Dr. Roger Osterholm

This week's staff: Dave Rovka, Wes Oleszewski, Steve Cagle, Hendry Betts, Rich Grey, Larry Benninger, Bill Fisher, John Getsy, Jeff Guzzetti, Kelli Young, Manuel Fernandez-Longo, and Tom Jullian.

The opinions expressed in this newspaper are those of the majority of the Editorial Board, and do not necessarily represent those of the university, the staff of the Avion, or the members of the student body.

Letters appearing in the Avion do not necessarily reflect the opinions of this newspaper or its staff. Letters submitted may be edited for brevity and may be printed provided they are not lewd, obscene, or libelous. Letter writers shall confine themselves to a single topic. All letters must be accompanied by the signature of the writer. Names may be withheld on request at the discretion of the Editor.

The Avion Editorial Board members are: Timothy S. Van Milligan, Allen Berg, Brian Nicklas, Pete Merlin, Jim Banks, Paul Novacek, Rob Watt, Larry Rice, and Chip Zodrow.

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Correspondence may be addressed to: The Avion, Embry-Riddle Aeronautical University, Regional Airport, Daytona Beach, Florida 32014. Phone: (904) 252-5561 Ext. 1062.

## Student Forum

### The Avion asks:

Do you think there should be a snack bar or grill of some type between the AMT, and Engineering buildings?



**Maureen Collins** - "Yes, it would be more convenient if one had classes over there instead of having to walk to the U.C."



**Carl Braz** - "I'm not an AMT student... I think it would be a good idea. The flight building has a lounge, I think the AMT building should have one too."



**Derrick Seys** - "I like the idea, and I think it would get rid of the lines at the flight deck; the U.C. would be less crowded also."



**Brad Maxwell** - "I don't think there is a need for it, because the U.C. is right here if you want something to eat; also McDonalds is close enough."



**Vicky Johnson** - "I don't feel it is necessary, because there is a vending area there already which is big enough for both AMT and Engineering students."



**Hope Sedowski** - "It makes no difference to me, I don't go over there at all, but for those who do it would probably be a good idea."

## Update: SGA constitution

### Avion Staff Writer

Voting began last Wednesday on a newly proposed SGA Constitution. The polls have remained open during office hours for the last week and are scheduled to close at 5 p.m. this afternoon.

Election officials state that voting has been light to moderate throughout the polling period.

"We're not really surprised," noted Richard Calvert, co-chairman for the constitutional committee. "Many people don't even know it (the referendum) is going on."

He continued, "This constitution, if passed, could bring about some real change in the SGA/student relationship. It's important that the students make a decision on it - this is one issue they actually have a choice in at this university."

At the polls, many students have asked what distinct differences exist between this "new" constitution and the one which the SGA currently operates under. According to constitution committee members,

the document offers a radical change from the current constitutional system. One member commented, "Under the present system, the students needing help or wanting to voice their opinions must go to the SGA; that is, the people must go to the SGA. Under the new constitution, officials would have to go out and meet the students more directly."

The proposed constitution requires the SGA president to go before the students twice during each trimester at peak times of the day to hold a question/answer open forum.

Additionally, if approved, the new system would redefine the student representative system. Representatives elected by the students would hold offices according to their degree discipline, rather than by number. Basically, this means that the representative would be required to be enrolled in the degree discipline they are serving. Also, the number of representatives allocated to each degree discipline would be

proportional to the total number of individuals enrolled in the degree discipline as compared to the student population of the university.

On a financial note, the current constitution maintains a Student Finance Board (SFB) composed of the Avion Editor, Phoenix Editor, a member of the Student Administrative Council, the Entertainment Chairman, and two students-at-large. Each division (i.e. Avion, Phoenix, etc.) receives substantial subsidy from the SGA. They are, in essence, the reviewing body for their own budgets.

"This represents a conflict of interest," noted Calvert, "They (the divisions) are involved in both the allocating and receiving aspects of the process."

The new constitution would remove the division chairmen from the SFB and place the authority instead with six students elected at-large by the student body as a whole. These members could have no formal affiliation with any other entity operating within the SGA.

## Letters

(continued from page 2)

the sum of the parts. Readers who are experienced in teaching a grading English composition and who undergo training sessions in holistic scoring develop valid, reliable and consistent judgment when grading a group of essays.

Readers evaluating essays holistically rate each piece of writing according to how well it meets a particular set of established standards. These standards include the following areas:

Content. The writer should demonstrate creativity and originality in responding to the essay prompt with an individual, clear and

consistent voice, a clear and sustained sense of audience, a clear purpose, with sufficient development using relevant details, including concrete and interesting examples.

Organization. The writer should use logical sequencing with effective cohesion, coherence and transition and should employ intentional and effective paragraphing throughout.

Usage and Mechanics. Sentences should be mature, demonstrating variation in length and structure, a reasonable mastery of standard American English, and effective and

consistent use of correct punctuation.

No one area of writing overshadows the others in holistic scoring; quality of thought and facility of language, in union, are evaluated. Indeed, the 1987 Common Final is intended to ensure that the student is proficient in writing before progressing to the more demanding communications classes. As Steven Costure noted in his editorial, the exam will benefit the students of ERAU.

Donna Kessler  
Assistant Prof. of Humanities

there is a need for it, because the U.C. is right here if you want something to eat; also McDonalds is close enough."

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## ΘΦΑ

By Marnie Sabien  
Secretary

The sisters of Theta Phi Alpha would like to thank those people who helped to support us at our cupcake sale. We hope you enjoyed the cupcakes as much as we did.

We would like to congratulate those people who took part in our "Quit Smoking" campaign for the Heart Association. Good luck and

stay healthy. Theta Phi Alpha will join in by taking part in an aerobathon sponsored by the Heart Association at a later date. Some of us will be looking forward to the event while other may not be as eager.

The Rape Crisis Center will be holding a seminar here on campus sponsored by Theta Phi Alpha. It is open to the public and everyone is urged to attend. The seminar will be at 7 p.m. Feb. 24 in room A-109.

## ΣΦΔ

By Joe Kyung Lee  
Historian

A few new items have been added to the softball team at Sigma Phi Delta. The first thing is a new athletic chairman. Brother Justin Laferte is now the coach who will drill the softball team into shape. Brian's appointment to this position occurred soon after Brother Williams' promotion from Athletic chairman to vice-president in the executive council.

The second thing is the new hats

for the softball team. All of the Brothers made a donation so that the Sigma Phi Delta softball team could have a uniform that includes the jerseys and baseball caps.

Another new item to be noticed is in the Pi House. The floors in the meeting room and living room have both been sanded and refinished with fresh coats of polyurethane. The work of sanding and refinishing took about a week's time, but it was worth it because the Pi House looks better than ever.

## IS

By Karl Weller  
Secretary

Can you believe the semester is half way through already? It's true, and we still have a lot of activities to do before the end.

There's more rocket building, and a Capri trip for the tour and DMAX Movie, plus we still have the Rid-

ge-Regatta left to win. So don't stop now, we still have much more to come.

Thanks to all of you who helped with the laser print sales. Also, the display case looked great! Because of Derrick, Mike, and all of those who contributed to the cause, we had one of the best looking display cases I have ever seen.

## AAAE

American Association of  
Airport Executives

By Kris Koenig and  
Mike DiStasio  
Vice President and Secretary

AAAE is finally getting things rolling. Some great events have been planned for this trimester and everyone's help thus far is appreciated. A special thanks goes to all of those who worked the Pretenders and Huey Lewis concerts. AAAE made \$300.

Also, some upcoming activities include an airport tour in March to Orlando International Airport and we are still trying to set up some guest

speakers. But what we have been concentrating on is the Southeast Conference in Baton Rouge on March 1 through March 4.

The A. AE Student Newsletter is shaping up and almost ready to be printed. Thanks goes to Sanders Turner and the group of you who put in the time and effort.

We will be having a meeting this Thursday at 6 p.m. in room A-111. Everyone is welcome. If you are not a member and interested in AAAE, drop a note in our mailbox in the Student Activities Office of call Kris Koenig at 257-5310.

## Clubs &amp; Organizations' Article Submission Guidelines

I. All Club writers are subject to the guidelines governing Avion staff members' conducting journalistic law. Any violation of these guidelines is grounds for immediate dismissal from their writing duties without notice.

II. All submissions should be truthful, newsworthy items, submitted no later than the publication deadline.

III. All articles are subject to editing for brevity and content. No obviously slanderous or libel statements or articles will be printed.

IV. If a slanderous or libelous statement is inadvertently printed, the club writer responsible for the statement(s), regardless of his or her standings within that club or organization, will be required to write a retraction for the statement(s) and will immediately be dismissed as a recognized club writer.

V. No articles by the club or organization guilty of such an action will be run until a formal letter signed by the club president is sent to the Avion notifying the Avion of a change in club writers. Once notification is received and confirmed, the new writer will then become a recognized club writer, and club articles can be run at that time.

## ΣΧ Σigma Chi

By Joseph C. Ceyro  
Club Writer

Our next program this spring has started off with 23 pledges. The Sigma Chi Red Cross Blood

drive was this week. Many thanks to all of you who gave blood.

Coming up is the Sigma Chi Easter Santa Harley Davidson bike give away. Later is the Clean up Daytona day, with Mayor Kelly.

## SILVER WINGS — AFROTC

By Robert P. Dobbs  
Public Relations Officer

With spring break just around the corner the members of SilverWINGS would like to remind you that drinking plus driving equals disaster. Just ask Mr. and Mrs. Topolinski, who lost their son Donald to an intoxicated driver over a year ago. They were kind enough to join us at our last meeting and expressed their appreciation with the work SilverWINGS has done on the Memorial Scholarship fund in their son's name. We still have a

long way to go until the fund is self-perpetuating, and any help you or any club could give would be greatly appreciated by both SILVERWINGS and the Topolinskis.

Recent events for the club include A pizza party at Mr. Gatti's and a car wash to help raise funds for the club. The car wash was held last Saturday and we had A fantastic turnout.

Our next meeting will be Thursday, Feb. 26th at 6:00 in the C.P.R. Keep watching for more activities from SILVERWINGS. The fun club that gets things done!

By Charles W. Carney  
Public Affairs Officer

Physical Fitness (PF) division has begun scheduling practices for our Lime Cup teams. Lime Cup is an annual competition between detachments in Florida. We have recently been challenged to some healthy competition by the University of Florida in Gainesville. PF has also begun a cup racquetball tournament that is spurring some healthy competition within the detachments.

Detachment 157 was honored to have the Air University National

Security Briefing Team speak to our Junior and Senior classes two weeks ago. The team also spoke at DBCC. The briefing team consisted of Col. Salminen, a chairman at Air War College at Maxwell AFB, Alabama; and Capt. Faber, an instructor at Squadron Officer School. The team presented issues of growing concern regarding current and future U.S. and U.S.S.R. national security trends.

While at Detachment 157, the team concentrated on roles for future officers would be expected to fulfill, possible concerns they would encounter, and other possible trends. The team's public briefing included

## ARMY ROTC

By Anne Gougherty  
Cadet Captain

The Eagle Battalion was proud to have their colorguard present the colors at the 29th Annual Daytona 500. At the start of the race, Sunday Feb. 15, the colorguard led by Cadet Captain Lena Mohler presented the American flag for the opening ceremony. T.G. Sheppard sang the American Anthem as all eyes were

on the American flag. On Tuesday, Feb. 17, the Eagle Battalion formed up in front of the speedway at 6:30 a.m. to run the 2 1/2 mile race track. The three companies were led by Colonel Carson, Professor of Military Science. The Eagle Battalion plans to have these Battalion runs frequently. Colonel Carson was pleased with the cadet turn-out and hopes that more cadets will attend the Battalion runs.

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# NAVAL

Naval Aviation Club

By Kathy Ward  
Public Affairs Officer

The Naval Aviation Club was very fortunate to have a SH-3 Sea King and her crew at the last meeting on Weds. Feb. 11. Commander Tim Hailtham, Commander Dave Crocker, Crewman Rhet Boudreau and Crewman Brad Sprick were available for comments and questions while the SH-3 Sea King was on static display Weds. afternoon.

The SH-3 Sea King is an anti-submarine warfare helicopter and it performs other duties as well. These duties include anti-surface warfare platform and search and rescue. The SH-3 Sea King is normally the first aircraft off the flight deck and the last to land at the end of the operating day.

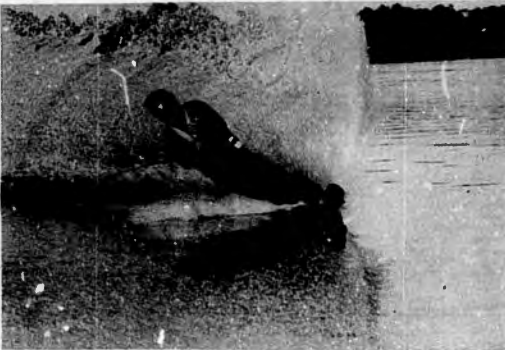
A slide presentation of the helicopters from the Vietnam era to the present SH-3, SH-60 Lamps Mark III, H-33E, and a look into the future of the V-22 Osprey tilt rotor aircraft was given by Commander Dave

Crocker. In the discussion afterwards Commander Tim Hailtham stated, "The rotary wing pilot rate is now approximately 30% of all Navy pilots and in the future will increase further."

Everyone that attended found the presentation to be very informative. The SH-3 Sea King belongs to the HS-15 Red Lions squadron in NAS Jacksonville. They deploy aboard the USS Forrestal.

The next meeting of the Naval Aviation Club will be on Weds. Feb. 25 at 1900 in G-109. Lieutenant Dave Emich, an A-7E Corsair attack pilot from VA-72 at NAS Cecil Field will be speaking on his aircraft. The VA-72 squadron deploys on board the USS America. Lieutenant Emich is hoping to have an A-7E aircraft available for static display, but watch for signs!

See you at the next meeting on Weds. Feb. 25 in G-109 at 1900. All are welcome!



See Club photo

Rene Baraket, president of the Embry-Riddle Ski Club, practices slalom-style turns at Lake Diaz, where the club holds daily practice.

# SKIERS-

Riddle Skiers

The last meeting of the Riddle Skiers took place Thursday February 12, at A-101 as usual. During that meeting, the final schedule for "Ski Nautique Users" was arranged. A few spots are still open, so hurry. The schedule is posted outside of the SGA office.

Policies related to barefoot training were also mentioned, and World Championship videos were viewed. The club ordered and is expecting delivery soon of additional equipment: Kildler jumpers and O'Brien trick skis, both for beginners and advanced skiers.

For all of you who may be interested to ski, there are two ways to join the club. First, as a recreational skier, which takes place every Saturday. There is a one time \$10 per trimester, plus \$3 per roll. Second, as a "Ski Nautique User" That entitles you to ski, literally unlimited

See Skiers page 18

# MOSLEMS

By A. Nordin  
Club President

To the casual reader the word "Moslem" is an adjective to explain the violent events in the Middle East. Furthermore, journalistic shorthand such as "Moslem left-ist", "Moslem separatist," etc., is no less than misleading, unfair, and potentially dangerous because it distorts and obscures the true and unbiased understanding of this word.

It implicates that Moslem -- that is, those who practice the religion of Islam -- are generally trouble-making fanatics. It tries to validate beliefs that Islam promotes violence. It belittles those who seek nothing but

piety and brotherhood, by imparting primitive or irrational motives that may otherwise not be ascribed to the participants in violent upheavals in non-Moslem countries.

Press accounts of turmoil in El Salvador do not, for example, describe the right wing hard-liners as "Christian extremists."

Islam is an Arabic word that means submission -- submission to the will of God. It is a religion that calls for complete acceptance of the teachings and guidance of God.

Moslem, or Muslim, its participial form, means one who freely and willingly accepts and submits to the Sovereign power of god and strives to organize his life in total accord with

As a matter of fact, the three largest Moslem nations are Indonesia, with about 140 million Moslems, Pakistan, 80 million, and Bangladesh, with 75 million. The largest Moslem population in an Arab speaking nation is Egypt with 50 million.

the teachings of Islam. The root is the same as the word of "malism," meaning peace.

Today, Islam embraces about 1,000 million people of every race and nationality, a vast majority of whom are non-Arab and originate no where near the Middle East. Thus, to identify Islam with the people and events in that part of the world is a gross exaggeration.

No doubt all Moslem believe in the same God and in the same form of worship but it is only logical that not all think alike or act in the same way towards non-Moslem. Economics, politics, history and tribal memory may have the same influence on Moslems as on anyone else, but Islam cannot be credited or blamed for everything that happens in the Moslem world.

It is true that the Qur'an -- the Holy Book of God's revelations that is the foundation of Islam -- does not teach that violence is to be shunned, but it prescribes it in self defense. More so, it also ordains justice, charity, mercy, self-denial and tolerance.

# VETS CLUB

By Greg Trayer  
Club Writer

This last weekend has been a quiet one for the Vet's Club, softball is still going strong. We've had a real good turn out this year and Don Kulig is doing a great job coaching the team. They have had a lot of good practice and are ready to play.

The Riddle Regatta is still in the planning stages. The committee members have been working real hard. They still need volunteers for committee work. There is a lot to be done. Feel free to come to the regatta committee meeting and lend your support.

The back stretch concession stand

at the Daytona 500 was a real big success. The minute it was opened the concession was over run by hungry race fans. The stand was busy all day. The people that worked the concession on the day of the 500 and the previous races did a excellent job despite all the heat and madness.

The Vet's Club is still looking for new members to add to our ranks. The Club welcomes all veterans on campus and associate members to attend meeting. Come join the most dynamic club on campus. Watch the Vet's Club bulletin board in the ramp area behind the flight deck for meeting times and special events.

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## SENIORS

We need you at the

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In an effort to raise funds for a Senior Class Project and Party we will be stuffing catalogs for the ERAU Admissions Department

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# RADIO

Radio Broadcast Club

By Lena Szaszinski  
Club Correspondent

The Broadcast club had its first meeting two weeks ago when a President was elected, Robert M. Ross. Since that time, progress on the proposed on-campus radio station has gone forward in leaps and bounds!

The FCC application is being hurriedly completed so as to enable the filing of a grant to the United States Department of Commerce. If successful, the grant will pay up to 75 percent of the cost to construct the station.

A generous member of a local

communication network has offered to inceptively lease lower space on which to mount an antenna. The location of this tower has been determined, by SGA employee telecommunications experts, to be perfect for transmitting at the high power requested by the SGA.

Very soon the students may be listening to WERU as far north as Benning, and as far south as New Smyrna.

The club still needs help in every way, shape, and form. Interested people are asked to attend the second meeting, Thursday, Feb. 26, at 7:30 p.m. in W308.

# ACET

(continued from page 1)

Dr. Brown emphasized that the IAC serves the University in an advisory capacity only. Decisions about the nature and future of programs are made by the Board of Trustees.

In addition, Dr. Brown pointed out that the opinions of the IAC were by no means universal in the industry. "Predominantly on our committee (IAC) are a group of Engineers, and Engineers sometimes — occasionally — will look down; will look away from Technology, and even in some departments may not even be hiring Engineering Technologists. But that's not what we were told when ABET came and reviewed us about a year ago. They

claimed that we had a strong program, and they claimed that we were on the right track."

For these reasons, the Administration has decided that the program should be continually developed. Dr. Schimmel pointed to the program as "the benchmark of the industry." He stated, "There are places around the United States that are tailoring their programs to look like ours. There is nothing wrong with our curriculum at all."

Dr. Schimmel said that most of the IAC members are engineers and not technologists and as such, do not deal with ACET graduates directly. Schimmel also noted that some of the companies represented by the

IAC do employ ACET graduates. He also showed that many of the students of the program will not go directly into the industrial market. Some of the students are foreign students who will return to countries that need well trained technologists. Others are ROTC candidates who will go directly into military service.

Some students present expressed some confusion over their program name. Others pointed out that upper level classes may be shared with Engineering or Avionics students. There is also an experimental senior design class which is a mixture of Aeronautical Engineering (AE) and ACET students doing the same design work. The students were also concerned that they were ineligible

to take the Florida Engineering in Training (EIT) exam and for most CO-OP positions.

About the fact that very few CO-OP positions are available for the ACET student, Dr. Schimmel stated, "We've been de-emphasizing the CO-OPs, a simply because of the smallness of the program in the upper levels. We're trying to keep the students to the scheduling sequence. If someone goes off on a CO-OP, for example, that's going to hold him for a year."

The administration believes that there is a simply because in the technology field. With a larger program, a new program chairman and quality instruction, Entry-Riddle can fill this market with qualified ACET graduates.

# Budget

(continued from page 1)

This program also faces complete elimination, meaning the loss of an estimated 787,000 jobs for students. Primary effects: reduces aid to low and middle income students.

**National Direct Student Loans (NDSL):** provides 90 percent of funding (institutions provide ten percent) for student loans as a government-subsidized five percent interest rate. Also mandated for elimination, affecting an estimated 513,000 recipients. Primary effects: reduces aid to low, middle and high income students.

**Guaranteed Student Loans (GSL):** provides government-subsidized ten percent loans to all students passing a needs test. A proposed cut of nearly two billion dollars would be achieved by halting federal subsidy of in-school interest rates and replacing the five percent origination fee with a nine percent "guarantee fee." Primary effects: requires all students to begin paying interest on loans while still in school; increases total cost of loans; cuts recipients by an estimated 200,000.

**State Students Incentive Grants (SSIG):** provides matching federal funds for state student aid programs. Proposed for complete elimination, affecting a half million students. Primary effects: reduces aid to low-income students.

**Special Programs for Disadvantaged Students (TRIO):** provides counseling and resources to encourage first-generation (people whose parents didn't go to college) and other students to enroll and remain in college. Faces more than 50 percent in cuts, eliminating 330,000 students (over 80 percent of recipients). Primary effects: reduces aid to very low-income students.

**Perkins Loan Program:** adds federal funds to those of colleges and universities to establish campus-based revolving loan funds. Cuts would eliminate loans for some 200,000 students and increased interest rates would make the loans more expensive for those still eligible. Primary effects: reduces aid to low-income students.

**Income-Contingent Loan Program**

While there are several other Education Department programs awaiting targeted for cuts, the administration is seeking \$600 million to expand the new Income-Contingent Loan Program now being tested at ten U.S. colleges. Originally proposed by Secretary of Education William Bennett after last year's Higher Education Act re-authorization hearings, the program was limited by Congress to a \$3 million experimental phase.

The ICL program would do away with federally subsidized interest rates while setting a cap of 15 percent. Borrowing limits would be raised to \$50,000, and students would be given longer repayment periods contingent upon their income after graduation. Some observers say this will lead to even greater debt burdens for many students. Patricia Smith, the American Council on Education's Director of Legislative Analysis, said that graduates earning higher income will see few ill effects, but warns, "If you have the misfortune to borrow high and land a low-income job,

those interest rates are going to be a big problem."

Jim Schmidt, Associate Director of the National Student Roundtable, supports Smith's prediction. "While the concept of loan repayment schedules based upon post-graduate income is a positive one for the students, this particular plan would only increase debt burdens and sum more people away from attending college."

The Department of Education, meanwhile, has issued somewhat conflicting statements concerning the program's intent. One official release said ICLs were intended "to assist most poor students," while another explained the shift away from federal subsidies by stating that "students are the prime beneficiaries of this investment in higher education. It is therefore reasonable to expect them — not taxpayers — to shoulder most of the costs of that investment."

In defending the ICL program during a recent appearance before the Senate Committee on Labor and

Human Resources, Secretary of Education William Bennett said it was modeled on one proposed by Boston University President John Silber ten years ago. Silber's plan, known as the Tuition Advance Fund, also featured income-contingent repayments, the concept of which would benefit low-income graduates. However, in a recent *New York Times* editorial, Silber pointed out that interest rates in his plan would range from two to eight percent, while the ICL "would allow a maximum of a crippling 15 percent."

The unproven nature of the ICL program leads many insiders to express doubts about expanding it to more students. Senator Robert Stafford (R-VT), ranking Republican on the Senate Subcommittee on Education, said during a recent appearance on "Face the Nation" that he thinks the administration is being premature in requesting the expanded program. Senator Phil and I put that in on a trial basis at the administration's request," he said. "We're supposed to re-evaluate the program in five years, and we're not even through the first year yet."

In a related matter, the Florida legislature has established a Daytona Beach Applied Research Consortium comprised of ERAU, UCF, Broward-Cookman College and Stetson University.

"We see great potential for this program," the consortium's President Kenneth L. Tallman. "A single theme, aviation safety-oriented research park, focused on a National Airspace System Simulation Laboratory and human resource development, could make a valuable contribution to the aviation community."

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school; increases total cost of loans; cuts recipients by an estimated 200,000.

more expensive for those still eligible. Primary effects: reduces aid to low-income students.

so few ill effects, but warns, "If you have the misfortune to borrow high and land a low-income job,

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## PRESS RELEASE

Volunteer Service Bureau will have a "Department Store" Garage Sale April 4 & 5 at the Daytona Beach National Guard Armory. Including all items that may be found in the home, we accept donations of any kind. Storage space is available for advanced donations which can be picked up or we will meet the donor at the storage site. We need volunteers to help with pickups (with a car or truck), storage and sorting, and for the week of the sale. Anything you could donate will be greatly appreciated, including your knowledge and ideas. PLEASE CALL 253-0563 ext.13

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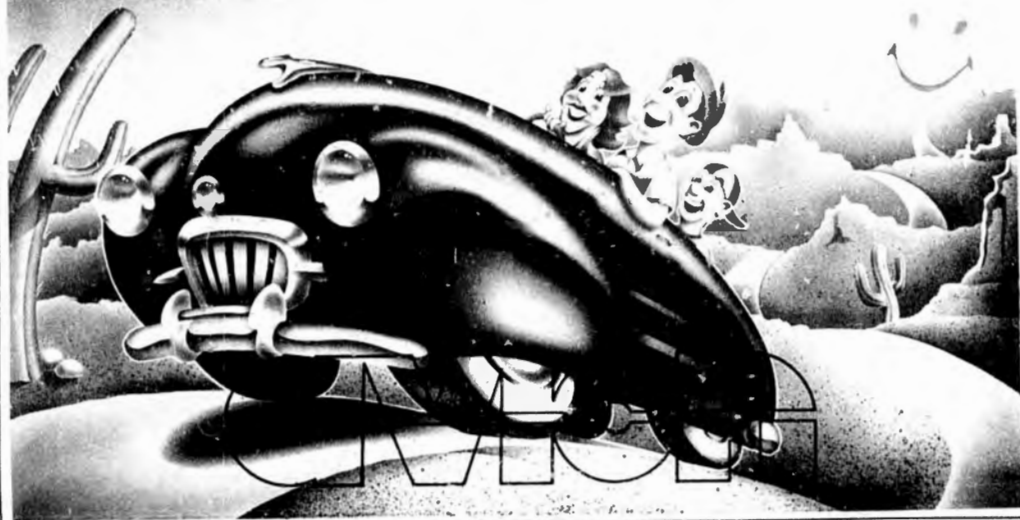
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Campus Ministry Announces  
Catholic Masses 10 a.m. 7 p.m. & 10 p.m.  
Protestant Services 11:15 a.m.  
Common Purpose Room U.C.

## Aerial displays fill spring event calendar

By Brian Nicklas

The opening of the 1987 airshow season is just around the corner, and many new sights will be seen, say the least.

The show closest to home, Daytona Beach's "Skyfest 87," is to take place a little later than usual this year, scheduled now for May 30 and 31. Star billing this year will go to the United States Navy "Blue Angels," who should be resplendent in their new mount, the McDonnell-Douglas F-18 Hornet. Don't expect the recent Angels mishap involving this aircraft type to put a damper on their show, as they should be capable of a more exciting routine in the new jet.

Other attractions at Skyfest are tentatively as follows: The ever-popular Eagles Aerobatic Team, flying Chittenden Eagles biplanes also returning from last year's show will be Lou Lendertager in the Bud Light 200; the French Connection aerobatic team; solo parachutist J. T. Hill and the usual growing swarm of military aircraft from all the services.

The first show for the area will be that of the Valiant Air Command, which is set for March 13, 14 and 15. The skies around the Spacecenter Executive Airport should be swarming with Warbirds at least by the March 11, to keep your eyes open.

The theme of this year's event will be the "Battle of Britain," and the VAC expect to have a Supermarine Spitfire, a Hawker Hurricane and an Avro Anson in attendance, as well as a host of other excellent vintage aircraft.

North American T-28SN should once again appear in force, and North American's prime fighter, the P-51 Mustang will be arriving in sufficient numbers to keep fans of the sleek pursuit ship happy. Although the show highlighting the B-25 Mitchell was last year, more and more restorations of this bi-engineered craft are ongoing, and some recently completed bombers undoubtedly will appear.

The VAC show is not all aircraft however, and some of the men who flew with the Royal Air Force's "Eagle Squadrons" will be special guests. The British Air Attache from the embassy in Washington, D.C., will also be seated with the VIPs, as well as pilots who flew with the ATA or Air Transport Auxiliary during World War II.

After the weekend frolic in Tusculum, a lot of the planes will head over to Lakeland for the EAA "Sun 'n Fun Fly-In" show which this year will celebrate its thirtieth anniversary. The Experimental Aircraft Association, who run this overwhelming event, bring together a wide range of aircraft for the week of March 15 - 21, all to help promote growth and education in aviation.

"Homebolls," like the P-51 Mustang and the Rutan series of aircraft



The North American T-6 Texan is one of many aircraft types to be seen at the many airshows this Spring. Florida. This

particular, 'Texan' is owned by VAC member Conrad Walvin, and is operated in Hawaiian Air Guard markings.

promise to be highlights of the show, while classics like the Siggewing and Stearman will draw their share of attention.

Aerobatic ships such as the Pitts Special and Christen Eagle will have their devotees, and an area will be set aside for those who like ultralights. Vendors and private sellers will be selling numerous goods from DC-3 parts to "Nose" flight suits and everything in between.

If you can stay for some of the evening events, a will hear discussions on topics like fabric repair, welding techniques or tax laws and how they affect the pilot. One of last year's popular speakers was noted author Martin Caiden (Marooned, Cyborg), who showed the crowd why he is known as being "outspoken." Caiden will be at Lakeland again this year, however he will only be present for the opening day events.

FAA head Donald Engen will be at Sun 'n Fun, as the FAA will have their own tent this year in which to conduct their forums. The FAA Regional Director for the Southern Region, Garland P. Castleberry will also be in attendance, all helping to show this year's expanded FAA participation.

One unusual group to show this year in Lakeland will be the "Red Baron," an aerobatic troupe consisting of four Red Stearman biplanes. Sun 'n Fun always proves to be a fun, interesting and education full week.

With all that is set for the Florida skies this Spring, it will be hard to tell friends that you are bored. At least there will be more to do than going to the beach.

## F-15E ready to enter evaluation program

United States Air Force

Edwards AFB, Calif. — Flight testing begins soon here on an advanced, jet-engine fighter due to be expected to give the Air Force a fleet of versatile all-weather aircraft capable of ground attack and long-range interception missions any time of the day and night, in addition to carrying out traditional air combat roles.

The aircraft is the dual-role F-15E, a two-place version of the twin-engine supercruise Eagle that has been the nation's top air superiority fighter for the past decade.

"The 'E' is almost a completely new aircraft," commented Lt. Col. Stephen D. Stowe, who heads the Air Force Flight Test Center's F-15 Combined Test Force here. "We've flight tested many of the systems going into the 'E' individually over the past few years. Our job now is to integrate these changes and improvements into a single airframe."

Stowe is managing the 36-month Edwards program to test and evaluate the F-15E. Among the significant internal and external differences being incorporated into the aircraft are:

An automatic, low-altitude navigation and targeting system called LANTIRN (Low Altitude Navigation and Targeting Integrated for Night), that will let pilots carry out ground-hugging attack missions,

day and night, in all types of weather.

External conformal fuel tanks, blending into the sides of the fuselage for increased range and payload, featuring "tangential" store carriage, which greatly reduce drag.

Maximum allowable gross weight that has been increased from 68,000 to 81,000 pounds.

An all-new state-of-the-art cockpit, including a rear seat station, with television-like displays for systems monitoring, navigation, and weapons management and delivery.

A strengthened airframe to absorb the increased payload, and withstand up to nine times the force of gravity (9 Gs).

The F-15E developmental test program will be carried out with two aircraft, the first scheduled to arrive at the F-15 test unit here by this weekend. It is being flown from the McDonnell Douglas manufacturing plant in St. Louis, Mo., by Stowe and Maj. Thomas K. Tolson, a flight test navigator.

During the planned test program, the No. 1 F-15E will be flown nearly 700 test hours to evaluate the integration of the LANTIRN system into the modified F-15 aircraft, test the aircraft's handling qualities and modified flight control system at increased payloads... and test and evaluate the cockpit design and functions under all mission scenarios.

The second F-15E test aircraft is slated to arrive at Edwards next

summer. It will be used as a structural loads aircraft to verify the strengthened fuselage at the heavier payloads and G forces. This aircraft will also carry out the majority of the testing and evaluation of the LANTIRN navigation and terrain-

The system, two externally-mounted pods coupled to the aircraft's radar and flight control units, underwent several years of initial development testing in Edwards on F-16 fighters, but has been adapted to the F-15E.

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Bug Eye... This Bell OH-58D Kiowa sports a McDonnell Douglas Astronautics main-mounted sight atop its rotor system, part of the U.S. Army Advanced Scout program.

## Testing to be highlighted in lecture by AF historian

By Brian Nicklas

If you enjoy the world of flight testing and flight research, have aspirations of becoming a test pilot or a flight test engineer, or even if you just love to fly, then a lecture Tuesday, March 3 should not be missed.

Dr. Richard Hallion, who is currently Director, Special Staff Office, Aeronautical Systems Division, Air Force Systems Command at Wright-Patterson Air Force Base in Ohio will present a lecture entitled "Flight Testing and Flight Research: from before the Wrights to beyond the

for Hallion, who has also authored such studies as *The Push to the Space Shuttle: The Evolution of Lifting Re-entry Technology and On the Frontier: Flight Research at Dayton 1946-1981*.

This expertise in the history of flight test has led to his work as a technical advisor on the NBC News special, "The Rocket Pilots" and a historical consultant for the Ladd Co. motion picture, "The Right Stuff."

Flight test is not the only area of aviation Hallion has written about. His most recent books cover fighter aircraft in the First World War

## Airline 'Top Ten' listed

Associated Press

Here are rankings of the 10 biggest U.S. airlines as measured by the revenue passenger miles they reported for the first half of 1986. A revenue passenger mile represents one paying passenger flown one mile and is used to determine an airline's capacity.

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A recorded message at the exper-





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Airphoto by Mark Stearn-Monography

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The second F-15E test aircraft is slated to arrive at Edwards next

week, featuring additional store carriage following components. By the end of the test program, the No. 2 F-15E will have flown more than 600 flight test hours.

In 1988, three more F-15Es will arrive at Edwards for testing. The first two are due in the spring of 1988 and will be flown by pilots of the Air Force Operational Test and Evaluation Center (AFOTEC), based at Kirtland AFB, New Mexico. Each aircraft will be flown nearly 100 hours in a wide variety of simulated wartime missions to evaluate the F-15E as a fully-operational combat aircraft, and verify that it can do the jobs it was assigned to do. The final F-15E to be assigned to the test unit will be flown here in the fall of 1988 and will be used to test a more powerful engine than those used in the F-15 fleet today.

The F-15 test force, now numbering about 200 military and civilian personnel, including contractor employees, will gain another 100 people by the summer of 1988 when the two additional test aircraft arrive for AFOTEC evaluation.

The main component giving the F-15E its low-level, night attack capabilities goes by the name LANTIRN.

F-16 fighters, has been adapted to the F-15E.

The navigation pod contains a terrain-following radar and forward-looking infrared (FLIR) component that gives the crew a TV-like picture of the terrain ahead for night and adverse weather missions. The second pod is used for laser targeting and weapons delivery. It also contains a FLIR coupled to automatic target acquisition and tracker units in the system and gives the crew a hands-off missile targeting capability.

Also adding to the F-15E's improved navigation and all-weather capabilities is an enhanced radar, and an inertial navigation system with a highly-accurate ring laser gyro to pinpoint the aircraft's location at all times.

The Air Force plans to purchase 392 F-15Es by 1995. They will augment the fleet of F-111 fighter-bombers in the current inventory. The first Air Force unit to receive the dual-role fighters will be the 405th Tactical Training Wing at Luke AFB, Arizona.

The service's F-15 acquisition and development program is managed by the Air Force's Aeronautical Systems Division, Wright-Patterson AFB, Ohio. System director is Col. Michael Buichon.

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Hallion is the author of several books on flight testing, including *Test Pilots: The Frontiersmen of Flight*, (which was an Aviation Week Book Club selection) and *Designers and Test Pilots*, a volume in the Time-Life "Epic of Flight" series.

Before taking the position at Wright-Patterson, Hallion was the Chief Historian at the Air Force Flight Test Center, Edwards AFB, California. This position was filling

for Hallion, who has also authored such studies as *The Path to the Space Shuttle: The Evolution of Lifting Re-entry Technology and On the Frontier: Flight Research at Dryden 1946-1981*.

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*The Rise of the Fighter Aircraft 1914-1918* showed the development of the fighter from the early reconnaissance scout planes to the nimble pursuit ships at war's end.

*The Naval Air War in Korea* covered the use of the naval air arm by the UN forces in the Korean conflict.

The lecture Tuesday evening at 8:30 in the University Center is co-sponsored by the LS Aerospace Society and *The Avion*.

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6. TWA 35.5 (TWA) 32.0 (Ozark) 3.5

7. Pan Am 20.6

8. USAir 13.2 (USAir) 9.7 (PSA) 3.5

9. Piedmont 8.1

10. Southwest 5.3

## Arctic Tern grounded polar flight stopped

### Associated Press

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Temperatures dipping to minus 48 degrees and disconcerting noises from a wing of the Piper Malibu prompted pilots Richard Norton and Colin Rosetti to make an unscheduled stop last week at Mould Bay, Northwest Territories.

Mould Bay is a tiny settlement on Prince Patrick Island at the northern tip of the Northwest Territories. This time of year, the cold is relentless and daylight is scarce.

When they landed at Mould Bay's snow-covered airstrip Feb. 11, the temperature was 48 below zero. Later, it sank to minus 60.

After trying to fix the wing problem, Norton and Rosetti could not

restart the engine.

"They've got absolutely no experience in working with these kinds of temperatures," said Larry Chenaille, who runs a Piper dealership in Fairbanks and advised the pilots to postpone their flight for safety reasons.

Norton and Rosetti chartered a flight out and returned to Philadelphia, Chenaille said Wednesday.

A recorded message at the expedition's flight center in Philadelphia said the aircraft will remain at Mould Bay until late spring and warmer temperatures.

The journey was dubbed "Flight of the Arctic Tern."

Norton, 48, an American and Boeing 747 captain, and Rosetti, 36, an aeronautical engineer from France, left New York on Jan. 19.

They arrived Feb. 10 in Fairbanks in their six-seat plane after a 16-hour flight from Hawaii.

# Launch Complex 39 is hub of America's spaceport

## Facilities at Florida's Kennedy Space Center have supported manned space flights for two decades

By Peter W. Martin

Launch Complex 39 at Kennedy Space Center is the heart of America's spaceport. Until 1963, this area of land north of Cape Canaveral was comprised of intermittent marshes and savannah. Over a three-year period, civilian contractors and the U.S. Army Corps of Engineers labored to construct facilities to support manned space flights to the Moon.

Twelve Saturn V/Apollo launch vehicles lifted off from Complex 39 during the late 1960s and early 1970s in support of the lunar missions. These were followed by the Saturn V/Skylab combination and three Saturn IB/Apollo vehicles that carried crews to the deployed Skylab space station. Another Saturn IB/Apollo carried a crew of three American astronauts to a rendezvous with a Soviet Soyuz spacecraft in 1975.

When the Apollo program ended, it was determined that reworking the facilities to support the Space Shuttle would be less expensive than

building all new structures. Two new additions were required, however. These were a special runway for recovering the Shuttle after return from space, and a spacecraft checkout barge called the Orbiter Processing Facility. From April 1981 to January 1986, twenty-five flights of the Space Transportation System were launched from Complex 39.

The Vehicle Assembly Building (VAB) is the heart of the complex. Originally built to handle the simultaneous erection of four of the 363-foot-tall Saturn V launch vehicles, the VAB contains 129,482,000 cubic feet of work space. At the time of its construction, the VAB was the largest building in the world. The 52-story structure covers eight acres of ground and is designed to withstand 125 mile per hour winds.

The VAB is divided into a 525-foot tall high bay and a 210-foot tall low bay. Once used for assembly and checkout of Apollo rocket stages, the low bay has been converted into a processing facility for

components of the Shuttle's solid rocket boosters that do not contain propellants; the forward and aft skirts, frustums, nose cones, and perches. The high bay is divided into four sections. Two areas on the west side are used for processing solid rocket booster segments containing propellant, and the empty external tank, which is later filled with liquid fuel at the launch pad. The other two high bays are the assembly areas where the orbiter, external tank, and boosters are mated on a Mobile Launch Platform (MLP) prior to rollout.

After assembly and checkout of the "stacked vehicle are completed, the huge outer doors of the high bay open to allow the crawler-transporter to enter and take its position under the MLP. The MLP is a two-story steel structure which serves as a transportable launch base for the Space Shuttle. Each of the three MLPs is equipped with two Tail Service Masts to provide orbiter umbilical connections for liquid oxygen and liquid hydrogen for the external tank. The MLP also has three exhaust ports, five sound suppression water nozzles, and a hydrogen burnoff system to prevent a dangerous cloud of excess hydrogen gas from forming during a preignition flow of liquid hydrogen through the main engines.

Two tracked vehicles called Crawler-Transporters are used to move the assembled Shuttle to the launch pad. Each Crawler is 20 feet tall, 131 feet long, and 114 feet wide with an unloaded weight of 6.3 million pounds. A Crawler has eight tracks, each with 57 segments or cleats. Each cleat weighs approximately one ton. Two 2,750-horsepower diesel engines power the Crawler.

A special roadway stretches between the VAB and the two launch pads. This crawlerway consists of two 40-foot wide lanes, separated by a 50-foot median. Built to withstand loads in excess of 12,000 pounds per square foot, the crawlerway is made of several layers of rock and sand,



Space Shuttles are assembled in the 52-story High Vehicle Assembly Building. Countdown

are conducted four firing rooms in the Launch Control Center building (lower right in photo).

averaging a total of seven feet in depth. Topped by four to eight inches of river gravel, the crawlerway can support the 17,000,000 pound loads of a MLP, Crawler-Transporter, and Saturn V.

Complex 39 includes two octagonal launch pads, each covering about a 0.25 square mile area. The center of the pad is dominated by a concrete handstand atop which the Space Shuttles are launched.

Each handstand supports a Fixed Service Structure and a rotating Service Structure. During the Apollo program, the launch tower was attached to the MLP and the Mobile Service Structure was a separate unit atop a Crawler-Transporter. The 265-foot tall Fixed Service Structure (FSS) features a hammerhead crane, a lightning mast, and twelve work levels at 20-foot intervals.

Swingarms on the FSS provide crew access to the orbiter and support for external tank fueling operations. The Orbiter Access Arm supports a small room with a capacity of six persons. Commonly known as

the "White Room", it allows access to the crew compartment of the orbiter. It remains sealed until seven minutes prior to launch. In case an emergency arises, the External Tank Gaseous Oxygen Vent Arm prevents vapors at the liquid oxygen vent system, atop the tank, from freezing and causing damage to the orbiter during launch. At the end of the arm is a cone shaped hood called the "benne cap", into which is pumped heated gaseous nitrogen to warm the vent.

The Rotating Service Structure provides access to the orbiter for installation and servicing of payloads at the pad. It also protects the orbiter from exposure to the weather.

The unmanned Apollo 4 and Apollo 6 and nine manned Apollo Saturn V rockets lifted off from pad 39A. Pad A was also the launch site for the Skylab Saturn V and the first 24 Space Shuttle missions. Apollo 10 (Saturn V), three Saturn IB Skylab crew transfers, Apollo-Soyuz Saturn IB, and Space Shuttle Mission 51-L, launched from pad 39B.

Located at the base of the VAB, the Launch Control Center (LCC) contains four firing rooms. Firing rooms 1 and 2 are equipped with the Launch Processing System to monitor vehicle assembly and checkout. The rooms are also used for countdown and launch operations. The remaining firing rooms are used for "secure" operations in support of classified missions.

A Shuttle Landing Facility (SLF) is located two miles northwest of the VAB. It includes a 15,000-foot long runway with a northwest/southeast alignment, and a Mate/Demate Device to install and remove the orbiter from the 747 carrier aircraft. The runway may be used to recover the orbiter after a successful mission or a Return To Launch Site abort.

Orbiters are processed and checked out in two Orbiter Processing Facilities (OPF). Routine maintenance and mission support take place in the OPF. Spacecraft and payloads that are processed in a horizontal mode are serviced in the OPF.



Space Shuttle Atlantis lifts atop pad 39B. The fixed and rotating service structures are to the left of the spacecraft.



Space Shuttle Atlantis lifts atop pad 39B. The fixed and rotating service structures are to the left of the spacecraft.

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# Satellite images help plot Maya settlements

National Aeronautics and Space Administration

Satellite images of Mexico's Yucatan Peninsula, Central Guatemala and Belize have led to new discoveries about ancient Maya settlement patterns, environmental zoning and natural resource use. NASA scientists have found evidence of an ancient river plain, sea level changes and tectonic fault lines, which may have been important geographic elements in shaping the ancient Maya civilization.

Investigators at NASA's Ames Research Center, Mountain View, Calif., also are using the satellite imagery to detect Maya water sources, such as natural wells and ponds, and compare their locations to those of ancient Maya ruins. Investigators believe the remote sensing project will help resolve a central question in Maya studies—how the Maya built a sophisticated civilization in a relatively resource-poor environment? They also hope to understand the mysterious cycles of expansion and decline that characterized Maya civilization. Many scholars believe that environmental problems, including misuse of resources, may have led to the periods of decline. The Maya civilization, noted for elaborate temples, advanced mathematics and astronomy and large-scale agriculture, spread across Central America from 2000 BC until the Spanish conquest in the 16th century.

"Environmental problems resembling today's problems were experienced long ago, on a smaller scale by the Maya and other ancient peoples," said Ames project chief Charles Duller. "By studying the Maya, we can better understand human interaction with the Earth system: how they adapted to the environment and its changes, and what changes they may have caused."

While remote sensing has been widely used to search for archaeological sites, the Ames project is among the first to use space technology to attempt to understand an ancient civilization by studying its environment. "In combining remote sensing, environmental studies and archaeology, this is a pioneering effort," Duller says.

Using Earth Observation Satellite and Earth Resources Observation Systems imagery from the Landsat 5 satellite, which has an advanced multi-spectral sensor called Thematic Mapper, the NASA-Ames researchers have imaged more than 24,000 square miles of the northern Yucatan Peninsula. A total of 50,000 square miles will be imaged by 1987. Researchers also are studying the Maya environment in central Guatemala, Belize and Quintana Roo, Mexico, with SEASAT, a radar-equipped satellite which operated in 1978. SEASAT data was supplied by the National Oceanic and Atmospheric Administration and NASA's Jet Propulsion Laboratory, Pasadena, Calif.

Analysis of Landsat images has shown that ancient Maya settlements in the northern Yucatan were closely concentrated along faults and fracture zones in the Earth. The fracture zones, shallow depressions created by tectonic fault lines in the bedrock, provide close access to subsurface water and have the best soil in the region. Previously, scientists had believed that topographical features in the flat, densely forested region were too small and scattered to affect Maya settlement patterns. "We've found a very dramatic difference in resource distribution in what was thought to be a relatively undifferentiated region," said Maya archaeologist Edward Kurjak of Western Illinois University, Macomb, Ill., the principal archaeological collaborator in the project.

In another research area, using SEASAT data,

Duller has discovered what appears to be an ancient river plain extending 300 miles across lowland Guatemala. If confirmed by ground-based studies, the finding could explain the location of Tikal, a major Maya trade and ceremonial center from 200 BC to 900 AD. Tikal appears remote and landlocked today.

The dry river plain also would provide evidence of a changing climate which could explain why the Maya abandoned major centers in this region in the 10th century as archaeological findings suggest.

A third major focus of investigation is the Yucatan Peninsula's northern coastline. Scholars have long known that the sea level along the Yucatan rose during Maya times, inundating the coast and increasing the salinity of the subsurface water table. The rise in sea level correlated the important Maya salt trade as the salt flats became submerged, thus down coastal settlements and may have affected agriculture far inland.

Ames researchers have found that the satellite images show natural linear features marking former coastlines beneath the water, enabling mapping and dating of various changes in sea level. Duller and Kevin Pope, a paleogeologist now at Ames, have begun analysis of the coastline changes.

The research also is focused on studying the availability and use of surface water by the Maya. "Water is the key to understanding the Maya," Kurjak says. "Finding sufficient water was an enormous challenge faced by the Maya and studying water resources will help in understanding their agriculture and population distribution."

Satellites can detect major Maya surface water sources, including small, scattered lakes, as well as aguadas, natural pools of water which the Maya often used for water storage, and cenotes, natural wells



Thematic Mapper on Landsat was used to study Mayan ruins on the Yucatan Peninsula.

formed from collapse or erosion of the limestone shelf. Kurjak and Duller plan to study the means of water storage used by the Maya in different regions by mapping the natural opportunities for getting water and overlaying this with a map of archaeological sites.

See IMAGES, page 18

## Two NASA search and rescue mission managers awarded Yuri Gagarin medal by Soviet delegation

National Aeronautics and Space Administration

Two NASA search and rescue mission managers, Robert Lovell and Fred Flatow, were awarded the Yuri Gagarin medal today by a space delegation from the Soviet Union.

The Yuri Gagarin medal, named after the Soviet cosmonaut who was the first man in space, was bestowed upon Lovell and Flatow in recognition of their contribution to COSPAS/SARSAT, an

international search and rescue program, which uses satellites to locate people in distress. Since its inception in 1979, COSPAS/SARSAT has helped save 750 lives.

The Yuri Gagarin medal is awarded for outstanding achievement in astronautics.

Lovell has worked with NASA for 25 years. Since 1980, he has served as director, Communications Division, NASA Headquarters, Washington, D.C. He manages advanced communications satellite

technology research and development.

Flatow joined COSPAS/SARSAT in 1982 as deputy for search and rescue missions, Goddard Space Flight Center, Greenbelt, Md. He became search and rescue missions manager in 1984.

In the United States, COSPAS/SARSAT is jointly operated by NASA, the National Oceanic and Atmospheric Administration, the Coast Guard and the Air Force.

## Booster joint redesign attacked

Associated Press

SPACE CENTER, Houston — NASA's approach to correcting the flaws that caused the Challenger disaster is under attack from industry experts, Congress and astronauts exactly a year before shuttle flights are scheduled to resume.

NASA officials and engineers from Morton Thiokol Inc., manufacturer of the solid-fuelled rocket, remain confident the new design will pass a critical series of firing tests scheduled to begin this summer and Rear Adm. Richard K. Truly, NASA associate administrator for space flight, assured aerospace executives in Los Angeles on Tuesday:

"We are not going to fly until we are ready."

Challenger exploded 73 seconds after launch Jan. 28, 1986, killing its seven-member crew. A presidential commission blamed the blast on a solid rocket booster joint that leaked flames.

Investigators believe three factors contributed to the failure: a flawed design that permitted the joint to move slightly at ignition, compressing the seal formed by two rubberized O-rings; cold weather that sheared the O-rings stiff, and wind shear that buffeted the rising spacecraft, perhaps causing the joint to open further.

Flights are scheduled to resume

Feb. 18, 1988, although NASA officials admit that date is optimistic and that the launch may be delayed. The new design includes a metal lip that will limit joint movement, a third O-ring in each joint and insulation that is interlocked in such a way that pressure from the rocket will actually tighten the seal.

Additionally, engineers are experimenting with the use of a silicon material in the O-rings to give them more resilience in cold. If the material proves inadequate, heaters will be used in the joint.

However, these elements remain

See BOOSTER, page 18

## V-22 OSPREY NEWS RELEASE

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However, these elements remain

See BOOSTER, page 18

## V-22 OSPREY NEWS RELEASE

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# Refs are the real show

By Al McGuire  
Former Basketball Coach

Alright fans, stop trying to be a bigshot. I want you to get to the game early for a change, so you can learn some interesting things about what the three-man Zebra — the officiating teams of college basketball — do.

First of all, they report on the court in the matching outfits, one referee and two umpires, and the main reason for this common appearance is to make sure the neither team dunks the ball during warm-ups. And, to make sure the uniforms the players wear meet the specifications — in the number and color — that the NCAA rules committee decrees.

Now if you look closely at the form-fitting black pants, you'll notice that all they have their pockets is an extra whistle. There's no jewelry or wristwatches. If they want to know what time it is, they either have to glance at the clock on the wall or ask the home coach.

If you happen to be a second-story man, you should know that the officials usually leave their wallets in their locker. In the left shoe, wrapped in a black sock. But don't waste your time. Because even if you happen to find the shoe wallets, you'll end up getting a combined amount of about twenty-eight dollars and thirty-six cents, and believe me, the watches will be Timexes, some thing from John Cameron Schwane's low-budget line. But, please, leave their eyeglasses, cause they gotta get home.

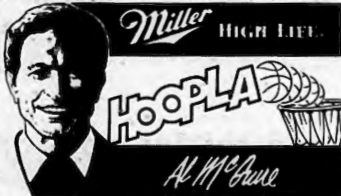
## Difficult work

What most people don't understand is that officiating is difficult work, which requires a well-conditioned body and an alert mind — but which doesn't bring down a Rockefeller salary, even in Division I-A. The guys who officiate the Final Four, for ex-

ample, get a flat fee of \$400 — no matter what the Nielsen ratings — plus a per diem of \$75 and first-class airfare for themselves alone.

I believe that any referee who works the Final Four should receive his salary, plus first-class airfare for two, so he can bring along his wife, and the same wristwatch or whatever momentum that goes to the players and coaches. This is normally a once-in-a-lifetime deal, and in my eyes, the officials who do the officiating are just as special — and just as much a part of the NCAA's success — as the coaches and players of the teams participating.

Okay, back to what to look for, once you've slid through the turnstiles and found your seat:



The most important trait an official can have is to set the tempo of the game, which should be maintained throughout. Also, if there's a conference with a coach, to immediately invite the opposing coach to join in, which usually means it ends up like Reyevik, with no real discussion whatsoever.

Remember one thing: The ideal official keeps a low profile during the game. He's resourceful and intuitive. He has a dignity of voice, but does not suggest any pompousness. He works as part of the team, has an understanding of the game, the players, and the coaches, and he knows what the

rules say and — even more importantly — what they mean.

Another thing fans who grab for the newspaper the morning after the game should understand: The officials are not, under any circumstances, to ever speak to the news media, that is, the newspapers, TV or radio, make no statement to them. They are permitted, however, to state the pertinent rules and decision regarding a play in which they are involved. Otherwise, for the three hours they are on sight, all they do is blink and nod, to anyone that is not a direct part of the game.

Believe me, officials answer all questions from the coaches with a pat phrase: It wasn't me / call but the toughest calls they have to make

there are the lead official, the center official and the trail official. What does each one mean?

Well the lead official assumes a position of depth off the end line, and has end line responsibilities. The center official takes a position between the 28 foot line and the end line. He is always across the court from the scorer's table and his sideline responsibility is from end line to end line. And the trail official positions himself in the mid-court area preferably nearer the division line and his sideline responsibility is from end line to end line.

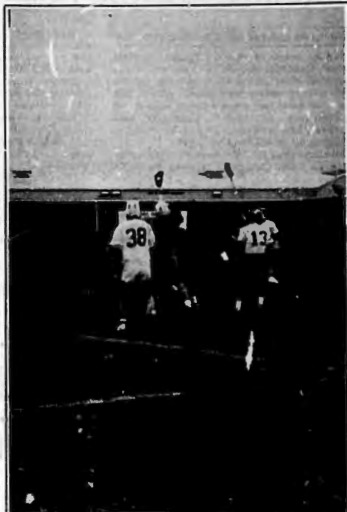
## One last Point

What that means, is that while the center official never changes, the others interchange — that is, the leader becomes the trailer and the trailer becomes the leader, depending on which way the action flows on down the court.

What this has become known as in the Triangle of Infallibility, which is the NCAA is somewhat like the Pope. What I like about all this is that the three man teams are now staying together more, being assigned more as a team, which means they are becoming more accustomed to working together as much as possible, which I think is good.

One last point. Always remember that referees don't have to be good. But they must be consistent, so the play's and coaches can adjust. Even if they are consistently incompetent, they're good. Consistency. That's what counts, if you want to be a good ref. If you're consistent, you're Michelangelo, ready for enshrinement in the Hall of Fame in Springfield.

Enough said. Let's throw up the ball and watch it work.



The Riddle lacrosse club fought in the pouring rain last Saturday. But it all paid off when they won the tough battle

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Game 2	Grim Reapers	VS	Downtowns	March 5th 8:00pm
Game 3	No Names	VS	AFROTC	March 5th 8:30pm
Game 4	ERAI Magic	VS	Kings	March 10th 5:00pm
Game 5	Trojans	VS	Winner Game 1	March 10th 5:00pm
Game 6	Delta Chi	VS	Winner Game 2	March 10th 5:30pm
Game 7	Spanish Fly	VS	Winner Game 3	March 10th 5:30pm
Game 8	Winner Game 4	VS	Winner Game 5	March 17th 5:00pm
Game 9	Winner Game 6	VS	Winner Game 7	March 17th 5:00pm
Game 10	Winner Game 8	VS	Winner Game 9	March 17th 5:00pm

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CLEAN IT UP

mind — but which doesn't bring down a Rockefeller salary, even in Division I-A. The guys who officiate the Final Four, for ex-

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by Richard P. Hallion  
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To apply stop by our office located on the 2nd floor of the University Center, or call 252-5561 ext. 1082 and ask for Larry.

## Copi Editor Kneaded

"The job has its pitfalls, but there are more girls here than in Avionics"

Paul, Copy Editor



## Position: Copy editor.

This is one of the toughest jobs that we have here at the Avion. The copy editor is responsible not only for reading and correcting all editorial and advertising copy, but is also supposed to keep headlines like the one above from occurring. If you have a strong journalism or English background and want to make a few friends, maybe we have a job for you. Main work times are Thursday and Monday Evenings from 5 p.m. until whenever. To apply come by our office or call 252-5561 ext 1082 and ask for Tim or Paul. A speedy reply is a must.



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To apply stop by our offices or call 252-5561 ext 1082 and ask for Hendry.

## Position: Sports Writers

The world of ERAU sports is wide indeed, its just that know one knows it. Our sports editor is in need of help, and there are still a lot of open positions that are slowing us down. You might cover basketball, baseball, or any other or the many sports that are always going on.

To apply, stop by our offices or call 252-5561 ext 1082 and ask for Allen.

## Position: Space Tech Writers

The Space Technology section has grown steadily for a long time, but it still can go a lot farther. If you're interested in Space, then this section is for you. Get your future launched today.

Applications are being accepted in our office, or call 252-5561 ext 1082 and ask for Pete.

## Position: Aeronautica Writers

Aeronautica is the newest section of the Avion, and as such, it has a large burden on its shoulders. When you become a Aeronautica writer, you'll be reporting on the "stuff" that made us all attend the University of the Sky. We need the writers, and the sky is only the beginning.

## Position: Advertising Writers

## TO APPLY STOP BY OUR OFFICES

Here's the real clincher. No experience is needed and you don't have to be a journalism or English major to work here. The only job requirements are drive and a willingness to learn.

To apply stop by our office located on the 2nd floor of the University Center, or call 252-5561 ext. 1082 and ask for Tim, Paul or Larry.



Is The famous "College News Hound" totally extinct? If you're out there, we need you. Stop by the Avion office today.

**Position: Copy editor.**

This is one of the toughest jobs that we have here at the Avion. The copy editor is responsible not only for reading and correcting all editorial and advertising copy, but is also supposed to keep headlines like the one above from occurring. If you have a strong journalism or English background and want to make a few friends, maybe we have a job for you. Main work times are Thursday and Monday Evenings from 5 p.m. until whenever. To apply come by our office or call 252-5561 ext 1082 and ask for Tim or Paul. A speedy reply is a must.



# Other Positions Open

Try sports, Diversions, Space Tech, or Aeronautica

## **Position: Feature Writers**

Even our entertainment and feature section Diversions can always use help. We need people to cover all aspects of ERAU life. This includes theatre, night life, people and just about anything that's fun and interesting.

To apply stop by our offices or call 252-5561 ext 1082 and ask for Hendry.

## **Position: Sports Writers**

The world of ERAU sports is wide indeed, its just that know one knows it. Our sports editor is in need of help, and there are still a lot of open positions that are slowing us down. You might cover basketball, baseball, or any other of the many sports that are always going on.

To apply, stop by our offices or call 252-5561 ext 1082 and ask for Allen.

## **Position: Advertising Reps**

Are you more the salesperson type? We can always use help in our advertising department. Meet important Daytona business leaders while selling Florida's best collegiate newspaper. The job is easy because the Avion sells, and sells very well. Big bucks are out there for the taking. Come by the office and talk to Larry.

## **Position: Space Tech Writers**

The Space Technology section has grown steadily for a long time, but it still can go a lot farther. If you're interested in Space, then this section is for you. Get your future launched today.

Applications are being accepted in our office, or call 252-5561 ext 1082 and ask for Pete.

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**TO APPLY , STOP BY OUR OFFICES  
OR CALL 252-5561 EXT 1082**



## Aviation Images

# John Barron's MiG Pilot is a must

By Dr. J. Roger Osterholm  
Prof. of the Humanities

Not all aviation literature can be of the caliber of books by Salm-Eickendorf or of *Catch-22*, which kept Heller quiet for a dozen years before his next book, but *MiG Pilot: The Final Escape of Lt. Barron* by John Barron is required reading for several reasons.

Barron, a senior editor with the Reader's Digest and expert on Soviet matters, wrote the book in 1980. Telling the story of the escape of a MiG-25 pilot from Siberia to Japan in 1976, taking his advanced intelligence with him, the book, nonetheless, avoids a knee-jerk condemnation or anti-Soviet view that might expect from the Reader's Digest.

On the basic level, the story is the exciting, first-hand account of a Russian pilot brought up reading books by Jack London, Mark Twain, and other masters, including Saint-Exupéry, taking civilian flying lessons, and becoming a Soviet jet pilot and instructor. He delighted in flying the MiG-17, the equal to the F-4 Phantom, but he was troubled

by the superior F-14, F-15, and B-1 bomber he read about in 1970. Then he became an instructor in the Su-15 interceptor, and in 1976 was sent as a MiG-25 pilot to the Far East, where he carefully plotted his escape in the Foxbat.

On another level the story is about a thinker with acute powers of analysis that enabled him to penetrate Soviet propaganda for home consumption. As a child in Siberia he learned to fight and to keep his mouth shut. As a young man he learned to think, always asking himself, "What would Spartacus do?" In the middle of Chapter 2, as Khrushchev publicly denounced Stalin in 1956, Viktor Belenko thought: "It must be true; else they would not say it. But how could Stalin fool everybody for so long? Khrushchev worked with Stalin for years. Why did it take him so long to find out? Why did he take so long to tell us? If everything the Party said before was untrue, is it possible that what it is saying now is also untrue?"

Observing the contradictions of so many alcoholics, malingers, and just hungry people in a society de-

scribed as paradise, Belenko also found contradictions in anti-American propaganda served daily to the military and Soviet civilians. Once, on being shown films of America in the 1930s and of New York slums, the jet pilot pondered: "If they are starving and can't find jobs and prefer communism, why don't they come over here? We need workers, millions of them, especially in Siberia, and we could guarantee them all the bread they need and milk too. But wait a minute. Who owns all those cars I see?"

The book offers technical information on the deficiencies in the design and construction of the steel MiG-25, previously thought a super-sporadic interceptor. The engine disintegrated at top speed, many of the rivets were old-fashioned, the radar set had tubes, not transistors. The analysis of the supposedly Mach 3.2 interceptor is in Chapter VII. The aircraft was rusty but easy to maintain, and the radar was "jam proof" by virtue of extreme power, which would fry a rabbit at 1000 meters.

The Russians worked overtime to force the West to surrender Belenko;

then they tried to cajole Belenko to return. They wanted to get their prized aircraft back, and it was returned, more than two months after Belenko landed in northern Japan, but "in pieces." This was more than the Russians did in World War II with the several American bombers that had to land there in the Far East. It was also far more than the Russians could do with a certain Boeing 747 that lies beneath Siberian waters.

Viktor Belenko, brought up hearing that "the Dark Forces" labored overtime "to kidnap the Mother Country" and that the perfected Communist Man was due by 1980, applied his skepticism to his experiences in America as well. He was first convinced that a typical shopping center was a special creation of the C.I.A. just to fool him into thinking America well off. Finally, fighting off a bout of homesickness, Viktor Belenko decided to become an American, having learned as well that Soviet scores for blacks as the lowest race, below Asians and Jews, was bigotry to be torn off with his Soviet uniform.

## Picnic in the park.



Two students take advantage of the sunny weather to enjoy a leisurely lunch outside.

## Solution to Crossword Puzzle from page 16

1. COP 2. HARRA 3. KID  
 4. AAR 5. ONSET 6. ORA  
 7. PRELATIVE 8. BRAD  
 9. TIGER 10. JELIA  
 11. BINDER 12. DUSTY  
 13. LINGER 14. NEED 15. ET  
 16. ADD 17. AFTER 18. ADD  
 19. YAL 20. BULE 21. BEAN  
 22. BEHOLD 23. AARS  
 24. LIND 25. DAIN  
 26. AWAKE 27. HALVARD  
 28. AAR 29. CHASE 30. VES  
 31. ANY 32. HARRY 33. YES

# Illinois won't renew defaulters' licenses

By James Webb  
Associated Press

SPRINGFIELD, Ill. — Thousands of dentists, nurses, teachers and other professionals who failed to repay their state-guaranteed student loans are in danger of losing their licenses, officials said Wednesday. About 2,200 professional license holders have defaulted on student loans, said Robert Clement, a spokesman for the Illinois State Scholarship Commission. The average defaulted loan in the state is \$3,200, he said.

More than 400 of the license

holders were notified this week that their licenses will not be renewed unless they contact the scholarship commission and set up a schedule for repaying their loans, said Gary L. Clayton, director of the Department of Registration and Education.

"So far, 'refusal to renew' letters have been sent to nurses, cosmetology teachers, psychologists, public accountants, dentists, dental hygienists, architects, engineers, land surveyors and physical therapists," Clayton said in a statement.

Clayton said members of other professions regulated by the de-

partment will be contacted about repayment of their loans as the renewal periods for their licenses come around.

People complying with the repayment schedules will have their

"The intent of the program is not to punish anyone... It is meant to coax these people into repaying the money..."

—Kathy Rem

licenses put on probation, said Kathy Rem, spokeswoman for the Department of Registration and Education. If they fail to make payments, their licenses could be revoked or

suspended, she said.

"The intent of the program is not to punish anyone or create hardship. It's simply to coax these people into repaying the money the state lent to them," said Mrs. Rem.

"We've had a number of calls from people - the money has started to be generated."

Clement said 51 licenses were not renewed because the licensees did not contact the scholarship commission or indicated they would not pay.

The Department of Registration and Education licenses 32 professional and occupational groups. Real estate licensees are the next group to come up for renewal, said Mrs. Rem.

A state law in effect since January 1986 authorizes the department to discipline license holders who default on student loans, Clayton said.

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**ACE HOBBIES**  
One of the Largest selections of  
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\$3,200, he said.  
More than 400 of the license

Clayton said members of other professions regulated by the de-

If they fail to make payments, their licenses could be revoked or contacted, said Clayton. discipline license holders who default on student loans, Clayton said.

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## NOTICES

### GRADUATING SENIORS

If a prospective employer requests an official transcript for a job interview, a Transcript Request must be initiated by the graduate. Requests should be submitted at the Registration and Records Office. Official Transcripts are \$2 per copy.

In accordance with University policy as stated in the Graduation Requirements section of the ERAU Catalog, all students will be required to have successfully completed all of their required courses and financial obligations before they will be allowed to participate in graduation ceremonies. This includes all degree required flight courses.

A student's last flight course must be completed prior to the date and time that senior grades are due in the Office of Registration and Records in order for that student to participate in that graduation ceremony. Students completing any required courses (flight or academic) after that time will be eligible to participate in the succeeding ceremonies.

### NASA FILMS

The following NASA films will be shown in the Riddle Theater on Fridays from 1:30 to 3 p.m.

Feb. 27: *Space Research and You... Your Home and Environment*

*Space Research and You... Your Transportation*

*Space Research and You... Your Health*

*Space Operations*

March 13: *Space Shuttle: Overview*

*Miles of Tiles*

March 27: *Space Shuttle: Mission to Science*

*Opening New Frontiers*

### INCOME TAX HELP

Free income tax assistance is available to anyone every Wednesday evening from 5 p.m. to 8 p.m. in Dean Brown's conference room located in Building A, the first office on the right. Ms. Wilson, Assistant Prof. of Business Administration, will be running the volunteer income tax assistance program with the help of her students. If you have any problems with your W-4 or your 1986 income tax forms, come by any Wednesday night until April 15.

### EXPERIENCE PLUS

We are looking for "non-traditional" students who are interested in getting together with other such students to form a new network here at ERAU. A "non-traditional" student is defined as someone who initially entered the university after a break of four years or more from academic studies. The purpose of this group would be to meet for discussions regarding issues that this unique group faces as well as to form a new social network. If you are interested, contact Lynne Evans or Linda Bloom in the Counseling Center, ext 1047 for further information.

### SUMMER 1987 GRADUATES

Students anticipating Summer '87 graduation should fill out a preliminary graduation evaluation and the Records and Registration Office. As many evaluations as possible will be processed prior to advanced registration for Summer '87.

### SENIOR CLASS FUNDRAISER

Today, Wednesday, Feb. 25, the Senior Class Council will need volunteers to help set a six-foot submarine sandwich! The sub is to be eaten in conjunction with the second day of a fundraising event involving the stuffing of ERAU catalogs into mailing envelopes.

The ERAU Admissions Office needs to have 15,000 catalogs mailed out, and they are paying the Senior Class to provide the manpower. The volunteers will be shuttled up to Bunnell at 6:00 p.m. Wednesday, and will return at 11 p.m. Interested students are requested to sign up in the Student Activities Office. Music and soda will be provided along with the submarine sandwich.

### CAREER CENTER WORKSHOPS

#### CO-OP ORIENTATION

February 25	Wednesday	12:30-1:30	FSL
March 5	Thursday	2:30-3:30	FSL
March 11	Wednesday	9:30-10:30	FSL

#### RESUME WORKSHOP

March 27	Friday	11:30-12:30	FSL
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### MATH AND PHYSICAL SCI. SEMINARS

Mar. 27 Dr. Andrzej Komocni *Residual Arithmetic*  
Apr. 10 Mr. Daniel P. Hocking *Supporting Yourself with UNIX*  
Note: All seminars are scheduled on Fridays at 1:30 p.m.

## Math Corner

PROBLEM: Miracle of mathematics

SOLUTION:  $P = m(v - v_0)$

Reducing  $t$  by quickly removing the dollar bill reduces momentum change to zero

PROBLEM: Answer to aging

SOLUTION:  $R_g/R_g = 1 - (v/c)^2$

$R_g/R_g = 1/50 = .2$ ; therefore,  $v = .9798c$

PROBLEM: My father says ...

SOLUTION:  $1(100) + 2(200) + 3(300) + \dots + 50(5000) =$

$12 + 22 + 32 + \dots + 50^2 = 100 = 492500$

Use  $12 + 22 + \dots + n^2 = n(n+1)(2n+1)/6$

## Billboard Magazine's top record hits

Associated Press

The following are Billboard's hot record hits as they appear in next week's issue of Billboard magazine. Copyright 1987, Billboard Publications, Inc. Reprinted with permission.

### HOT SINGLES

1. "Livin' on a Prayer" Bon Jovi (Mercury)
2. "Jacob's Ladder" Huey Lewis & The News (Chrysalis)
3. "Keep Your Hands to Yourself" Georgia Satellites (Elektra)
4. "Will You Still Love Me?" Chicago (Warner Bros.)
5. "You Got It All" The Jets (MCA)
6. "Somewhere Out There" Linda Ronstadt & James Ingram (MCA)
7. "Respect Yourself" Bruce Willis (Motown)
8. "Right For Your Right" Bonnie Boys (Def Jam)
9. "Big Time" Peter Gabriel (Geffen)
10. "Ballarina Girl" Lionel Richie (Motown)
11. "Touch Me" Samantha Fox (Jive)
12. "Mendocino Run" Bruce Hornsby & The Range (RCA)
13. "Love You Down" Ready for the World (MCA)
14. "I'll Be Alright Without You" Journey (Columbia)
15. "Let's Wait Awhile" Janet Jackson (A&M)

### TOP LP'S

1. "Slippery When Wet" Bon Jovi (Mercury)—Platinum (More than 1 million units sold)
2. "Lemoned to Me" Beatle Boys (Def Jam)—Platinum
3. "Night Songs" Cinderella (Mercury)—Platinum
4. "The Way It Is" Bruce Hornsby & The Range (RCA)—Platinum
5. "Georgia Satellites" Georgia Satellites (Elektra)—Gold (More than 500,000 units sold)
6. "Control" Janet Jackson (A&M)—Platinum
7. "Invisible Touch" Genesis (Atlantic)—Platinum
8. "Different Light" Bangles (Columbia)—Platinum
9. "Thr-d Stage" Boston (MCA)—Platinum
10. "Fore!" Huey Lewis & The News (Chrysalis)—Platinum
11. "True Blue" Madonna (Sire)—Platinum
12. "Oraceland" Paul Simon (Warner Bros.)—Platinum
13. "Dancing on the Ceiling" Lionel Richie (Motown)—Platinum
14. "The Final Countdown" Europe (Epic)—Platinum
15. "By Request" Billy Vera & The Beaters (Rhino)
16. "Rapture" Anita Baker (Elektra)—Platinum
17. "Sonog Persuader" Robert Cray (Mercury-Highnote)
18. "The Return of Bruno" Bruce Willis (Motown)
19. "Give Me the Reason" Luther Vandross (Epic)—Platinum
20. "Notorious" Duran Duran (Capitol)—Platinum

## AIRSCAPE BALLOON

SOLUTION:  $1(100) + 2(200) + 3(300) + \dots + 50(5000) =$

$12 + 22 + 32 + \dots + 50^2 = 100 = 492500$

Use  $12 + 22 + \dots + n^2 = n(n+1)(2n+1)/6$

10. "Right For Your Right" Bonnie Boys (Def Jam)
11. "Touch Me" Samantha Fox (Jive)
12. "Mendocino Run" Bruce Hornsby & The Range (RCA)
13. "Love You Down" Ready for the World (MCA)
14. "I'll Be Alright Without You" Journey (Columbia)
15. "Let's Wait Awhile" Janet Jackson (A&M)

15. "By Request" Billy Vera & The Beaters (Rhino)
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18. "The Return of Bruno" Bruce Willis (Motown)
19. "Give Me the Reason" Luther Vandross (Epic)—Platinum
20. "Notorious" Duran Duran (Capitol)—Platinum

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### PROMOTIONS

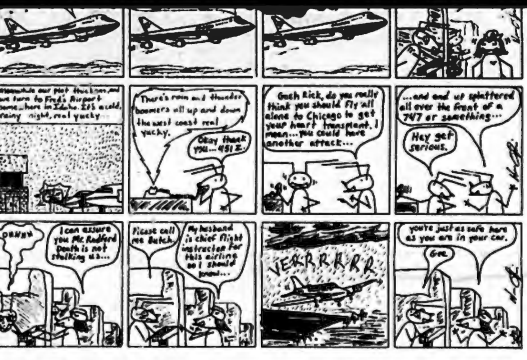
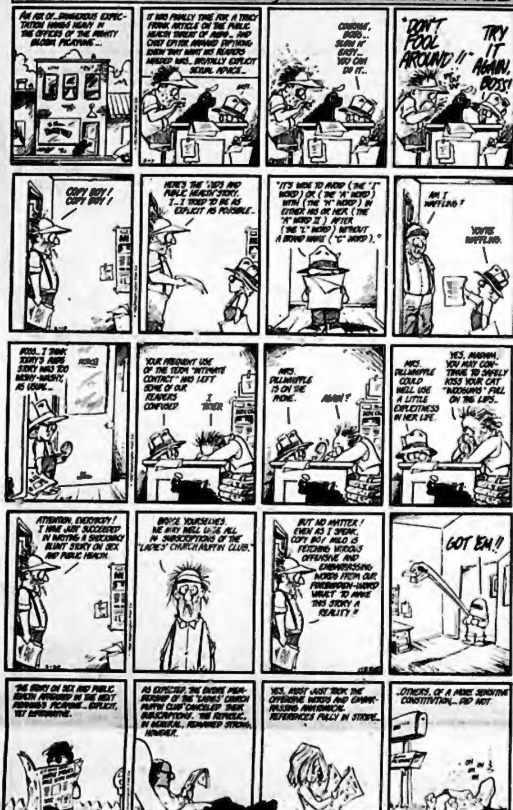
Cameron balloon sales  
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T.V. commercials  
Store openings  
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**BLOOM COUNTY** By **BERKE BREATHED**

**SCAREPORT**

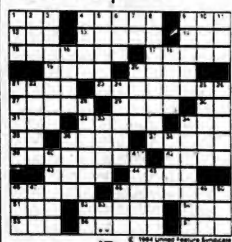
**WES OLESZEWSKI**



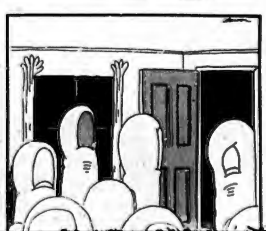
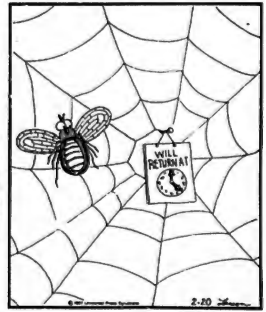
**The Puzzle**

**THE FAR SIDE**

**By GARY LARSON**

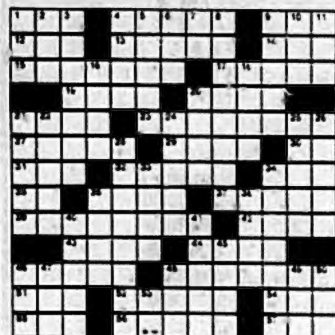


- |                           |                            |
|---------------------------|----------------------------|
| Across                    | Down                       |
| 1 Policeman:              | 39 Moves like a snake      |
| 4 Crown                   | 42 Organs of hearing       |
| 9 Yovan                   | 11 Parent: colloq          |
| 12 Swiss river            | 16 Citrus fruit            |
| 13 Beginning              | 18 Penicillin              |
| 14 Anglo-Saxon money      | 44 Cognizant               |
| 15 Church                 | 48 Rope for hoisting sails |
| 17 Transgressed           | 51 Sodium chloride         |
| 19 Rise and fall of ocean | 52 Flight                  |
| 20 Insect                 | 54 Brood of pheasants      |
| 21 Bank                   | 55 One, no matter which    |
| 22 Dependence             | 56 Capital of Oregon       |
| 27 See-going vessel       | 57 Playing card            |
| 28 Want                   | 58 Doves                   |
| 30 Latin conjunction      | 1 Headgear                 |
| 31 Sum up                 | 2 Padlock                  |
| 32 Shrewy fowl            | 3 Shun                     |
| 34 Fuse                   | 4 Frog                     |
| 35 Symbol for uranium     | 6 Bury                     |
|                           | 8 Plant Cyn's              |
|                           | 10 Grain                   |
|                           | 13 Mohammedan bible        |
|                           | 14 Anger                   |
|                           | 15 Parent: colloq          |
|                           | 16 Citrus fruit            |
|                           | 18 Penicillin              |
|                           | 20 Escape                  |
|                           | 21 Narrow, flat boards     |
|                           | 22 Partaining to the tide  |
|                           | 24 Go in                   |
|                           | 25 Evergreen tree          |
|                           | 26 Short jackets           |
|                           | 28 Imprudence              |
|                           | 33 Winter vehicle          |
|                           | 34 Unyielding              |
|                           | 36 Roman road              |
|                           | 38 Slippers                |
|                           | 40 Country of Europe       |
|                           | 41 Extra                   |
|                           | 45 Turkish flag            |
|                           | 46 Man's name              |
|                           | 47 Pain                    |
|                           | 48 Actor Linden            |
|                           | 49 Grain                   |





## The Puzzle



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### Across

- |                              |                               |                              |
|------------------------------|-------------------------------|------------------------------|
| 1 Policeman:<br>sl.          | 39 Moves like<br>a snake      | 9 Mohammedan<br>bible        |
| 4 Crown                      | 42 Organs of<br>hearing       | 10 Anger                     |
| 9 Young goat                 | 43 Care for                   | 11 Parent: colloq.           |
| 12 Swiss river               | 44 Tropical tree              | 18 Citrus fruit              |
| 13 Beginning                 | 46 Cognizant                  | 18 Peruse                    |
| 14 Anglo-Saxon<br>money      | 48 Rope for<br>hoisting sails | 20 Escape                    |
| 15 Church<br>dignitary       | 51 Sodium chloride            | 21 Narrow, flat<br>boards    |
| 17 Transgressed              | 52 Frighten                   | 22 Pertaining to<br>the tide |
| 19 Rise and fall<br>of ocean | 54 Brood of<br>pheasants      | 24 Go in                     |
| 20 Insect                    | 55 One, no matter<br>which    | 25 Evergreen tree            |
| 21 Stalk                     | 56 Capital of<br>Oregon       | 26 Short jackets             |
| 23 Dependence                | 57 Playing card               | 28 Imprudence                |
| 27 Sea-going<br>vessel       | Down                          | 33 Writer vehicle            |
| 29 Went                      |                               | 34 Unyielding                |
| 30 Latin<br>conjunction      | 1 Headgear                    | 36 Roman road                |
| 31 Sun up                    | 2 Paddle                      | 38 Slippery                  |
| 32 Showy flower              | 3 Sham                        | 40 Country of<br>Europe      |
| 34 Fuss                      | 4 Frog                        | 41 Extra                     |
| 35 Symbol for<br>tantalum    | 5 Bury                        | 45 Turkish flag              |
| 36 Small island              | 6 Pear Gyn't's<br>mother      | 46 Man's name                |
| 37 Style of<br>automobile    | 7 Concerning                  | 47 Pale                      |
|                              | 9 Studios                     | 48 Actor Linden              |
|                              |                               | 49 Grain                     |
|                              |                               | 50 Lair                      |
|                              |                               | 53 Symbol for<br>calcium     |

see Puzzle Answer,  
page 14

## THE FAR SIDE

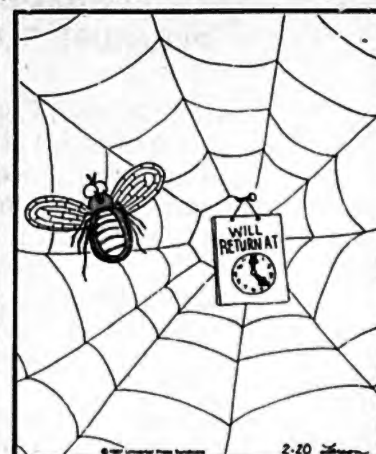
By GARY LARSON



Deer grandmothers



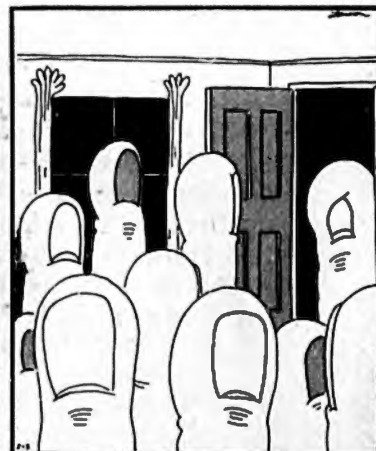
Evidence from a dog crime



"Zeld! Cool ill ... The Rothenbergs  
hear the can opener!"



"Thanks for coming. Something's wrong —  
everything just seems a little too quiet  
and normal today."



Suddenly, everyone turned and looked —  
there, standing in the doorway, was one  
wretched, mean-looking ingrown.



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## IMAGES

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In the Yucatan, which has mainly seasonal surface water, the NASA researchers are comparing imagery from the wet and dry seasons to determine the distribution of surface water. Coupled with ground-based studies of how the climate has changed, the research will lead to a determination of how much water might have been available during Maya times. Scientists could then determine which areas might have been optimal for agriculture and how many people the land could have supported. This could help shed light on the periods of Maya decline.

Some scholars believe the Maya may have exhausted the soil in attempting to support a large population. The Maya are thought to have practiced slash-and-burn farming which leads to water run-off, erosion and depletion of nutrients, unless the land is allowed to lie fallow for 8 out of 10 years. They may have severely damaged their environment. Much as we do today, they appear to have sought short-term benefits and created a long-term disaster," Kurjak said.

Researchers believe that locating surface water sources is an effective means of discovering new archaeological sites. "It's closely coupled. Where you find water, you usually

find ruins," Duller says. The Landsat images show numerous apparent aqueducts and canals, which must be confirmed by field investigation.

NASA researchers had initially hoped Landsat would detect ruins directly. They had thought vegetation growing on ruins would be weaker or more stressed, since they have poorer access to water, and that appear as a different shade in the infrared images from surrounding vegetation. But the researchers found that in the Yucatan all vegetation appears highly stressed. Duller believes that radar imagery will be able to penetrate the dense vegetation covering many sites. If permission from the Mexican government can be obtained, he would like to use radar-equipped aircraft for further research.

Satellite imagery has been highly effective for locating cleared ruins. This capability is significant because much of the Yucatan is only now being mapped and locating even excavated sites from the ground has been extremely difficult since the region is flat, thickly forested and has few roads. There were explorers in the Yucatan for a hundred years. Sites were discovered, but to memory, rediscovered, named and renamed," Kurjak recalls. (Kurjak is now working with the Mexican National Institute of

Anthropology and History, in their project to map all archaeological ruins in the Yucatan.)

Ames researchers have mapped large portions of the 62-mile raised road from Cobé to Yaxuna, which is by far the longest of the many elaborate causeways built by the Mayas to connect ceremonial centers. Kurjak and Duller now plan to study the environmental setting of the Cobé-Yaxuna road, particularly its location in relation to water sources and settlements.

The researchers stress that satellite data is highly valuable in archaeology not just for finding ruins, but for helping to understand the environment and thus, the civilization. "Archaeology is not just a glorified treasure hunt. It is the study of the relationship between human beings and their environment. Satellite technology is an extremely effective and inspiring way for archaeologists to study the environment," Kurjak said.

The Ames archaeology-remote sensing project stems from NASA's interest in demonstrating the applications of space technology to a wide variety of disciplines. The project also reflects NASA's growing emphasis on applying space technology to studying the Earth's ecosystem -- the problems involved in maintaining a stable, life-sustaining environment on Earth.

## Sex and AIDS

Associated Press

RALEIGH -- The sexual revolution of the past two decades is declining as AIDS hits the heterosexual mainstream, but some people are ignoring the threat of the fatal disease, experts say.

"My impression is that there's still a substantial amount of ignorance and even a substantial number of people who don't want to think about it," said David H. Jolly, AIDS health director for North Carolina. "It seems to me they're burying their heads in the sand, if that's the case."

But a Raleigh bartender says that among the bar's regulars, fear of acquired immune deficiency syndrome seems to have tamed sexual styles.

"People are definitely getting pickier," she told The News and Observer of Raleigh. "They crack jokes about AIDS. I don't see people getting picked up any more."

Across the nation, AIDS has hit hardest at gay men and drug abusers. But even in North Carolina, the fatal disease has reached the mainstream.

It has infected men, women and even babies in North Carolina. It has crept onto the state's military bases and college campuses, and it is knocking at the bedroom doors of heterosexual adults who are sexually active.

C. Everett Koop, the U.S. surgeon general, is waging an anti-AIDS campaign around the country to warn heterosexuals against promiscuous sex. For those who do not follow that advice, Koop urges the use of condoms and "safe sex" practices to avoid the exchange of body fluids. He says that heterosexuals make up about 4 percent of all AIDS cases, but that the share will rise to 10 percent by 1991.

This has always been known as a cruise bar," the manager of a gay men's nightclub in Raleigh said recently. "You came here to pick somebody up."

All that has changed with AIDS. "Now you come here to socialize," he said.

Bartenders and health workers say many gay men have made dramatic changes in their sexual styles, sticking to one sex partner or using condoms and safe sexual practices to prevent the spread of the virus.

Heterosexuals are just beginning to realize they can get the disease from a sexual partner, too.

"Sometimes people just don't see how it relates to them," said Scott D. Hunsaid, who works with the Gay and Lesbian Health Project in Durham. "If you aren't involved in a monogamous relationship - with someone who's never had sex with anyone else before - there's some risk."

One measure of the state's sexual activity - cases of gonorrhea, another sexually transmitted disease - showed a slight decline last year. But the 2.9 percent decline followed a year of fluctuations and may not be significant.

"How do you measure change in behavior? It's difficult," said James R. Fowler, head of the state's office on sexually transmitted diseases.

AIDS cannot be spread by casual contact, such as touching or hugging or coughing. It can be spread through body fluids such as semen or blood. That means any exchange of fluids - in sexual intercourse, or sharing intravenous needles during drug abuse - can transmit the virus that causes AIDS.

"My hunch is that heterosexuals are only recently becoming concerned about AIDS," Jolly said. "I've spoken to lots and lots of gay men who have changed their sexual behavior as a result of AIDS."

Of the state's 6 million residents, the official count on AIDS last month was 171. Of that number, 104 were homosexual or bisexual men and 24 were intravenous drug abusers. The rest were hemophiliacs who got AIDS through pre-1985 blood transfusions and people who got it from heterosexual contact.

Health officials say the number of people infected with the AIDS virus last month was 9,000, with many of those people not knowing they are infected.

## Skiers

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during weekdays for \$25 per month plus a small fee for gas.

Skating takes place daily now in Lake Dixie. If you are interested, you are very welcome to our next meeting Thursday February 26, in A-101 at 7 p.m., or check at Student Activities office.

Training is provided, and rides can be easily arranged. Do not be embarrassed if you have never been on skis before. We all started that way, one time or another.

## Campus

(continued from page 1)

Building, will affect mainly the University Center. These changes will include moving the cashier's office into the new Admin. Building, and the enlarging of the Bookstore's offices into the present cashier's office.

The Career Center, the Faculty Staff Lounge, and the Avion - Phoenix office, will remain as they are.

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## BOOSTER

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largely untested.

Rocket tests of the new joint design will begin in June, said Thiokol spokesman Jesse Moore. A new test stand to be completed by October at the earliest will also enable engineers to chill or heat the joints and simulate wind shear.

Moore said plans called for flight tests of the full-scale rocket before the first shuttle flight and a hot test after the flight, because the Florida launch is set for February, a cool month.

However, the National Research Council, which is overseeing the re-

design, has recommended heat testing before the flight.

A Senate subcommittee, led by Sen. Donald W. Riegle Jr., D-Mich., has also criticized NASA for not formally seeking the assistance of four other companies that manufacture solid rocket engines.

Several officials from the committee expressed concern that Thiokol's complex new joint design would lead to problems in assembling the 1.2 million-pound, 149-foot-long rocket engines and have proposed alternatives.

Astronauts John Young and

Robert L. Gibson also have questioned whether tests on the new rocket will adequately duplicate the effects of wind shear.

Gibson said earlier this month that the six braces that attach the rockets to the rest of the shuttle components endure forces of up to 290,000 pounds each and that some of the tests do not match this force.

The National Research Council has expressed similar concerns.

John Thomas, a NASA official leading the redesign team, said engineers were studying ways to improve testing of the structural loads on the rocket engines.

However, the National Research Council, which is overseeing the re-

design, has recommended heat testing before the flight.

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